LEADER CONSIDERATION RECONSIDERED: THE L FACTOR IN LEADER BEHAVIOR

BY

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DISSERTATION

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ABSTRACT

In the current dissertation, I propose that leadership research has progressed by repeatedly reinventing the concept of leader consideration. First, I provide a historical review of the origins of leader consideration. Then, I conduct empirical demonstrations (using both meta-analytic and primary data) to assess the redundancy of various leadership constructs [leader-member exchange (LMX), contingent reward, and transformational leadership] with leader consideration. Results support the existence of a higher-order L factor (general Leadership Factor) that characterizes the overlaps among individual-level follower perceptions of leader consideration, LMX, contingent reward, and transformational leadership. The L factor: (a) is very strongly associated with its subordinate constructs (first-order leadership factors), (b) is shown to carry most of the explanatory power of these lower-order leadership constructs in terms of associations with external variables, and (c) is redundant with the classic construct of leader consideration.

To Mom and Dad – thank you for your endless support.

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TABLE OF CONTENTS

CHAPTER 1 INTRODUCTION

Leadership has been defined in many ways. According to Hemphill and Coons (1957), leadership refers to, "the behavior of an individual when he is directing the activities of a group toward a shared goal" (p. 7). Yukl (1989) noted that numerous definitions of leadership exist, such as, "individual traits, leader behavior, interaction patterns, role relationships, follower perceptions, influence over followers, influence on task goals, and influence on organizational culture" (p. 252). Bass and Stogdill (1999) also provided a multifaceted definition of leadership that includes a variety of factors: "group processes, as a matter of personality, as a matter of inducing compliance, as the exercise of influence, as particular behaviors, as a form of persuasion, as a power relation, as an instrument to achieve goals, as an effect of interaction, as a differentiated role, as initiation of structure, and many combinations of these definitions" (p. 11). Over the years, different empirical measures of leadership constructs have focused on different aspects of these leadership definitions, and the current dissertation will attempt to contribute to the ongoing construct validation process of sorting out the underlying constructs on popular leadership measures, with an emphasis on leader behavior.

Leader behavior is important to leadership scholars, practicing managers, and employees themselves. Several meta-analyses (DeRue, Nahrgang, Wellman & Humphrey, 2011; Dulebohn, Bommer, Liden, Brouer & Ferris, 2012; Gerstner & Day, 1997; Ilies, Nahrgang & Morgeson, 2007; Judge & Piccolo, 2004; Judge, Piccolo & Ilies, 2004) have found that leader behavior is related to many work outcomes, including follower motivation, follower job satisfaction, follower satisfaction with leader, leader job performance, group performance, organizational justice, organizational citizenship behavior, organizational commitment, and turnover intentions.

The scientific study of leadership has included a number of constructs and construct labels. In fact, Fiedler (1971) asserted, "there are almost as many definitions of leadership as there are persons who have attempted to define the concept" (p. 1). The current dissertation assesses whether some of the most influential leadership constructs might be redundant with each other, and as such attempts to advance construct validity in the leadership domain. Construct validity describes the extent to which a measure captures or represents a particular construct (Cronbach & Meehl, 1955). Construct validation is a continual process and is crucial for making inferences about relationships between variables (Edwards, 2003). There are several aspects of construct validity, including convergent validity and discriminant validity (Campbell & Fiske, 1959). When different measures of the same construct demonstrate convergence (i.e., are strongly correlated), then there is convergent validity. When different measures of different constructs diverge (i.e., are correlated much less than 1.0), then there is evidence of discriminant validity.

Another aspect of construct validity is content validity (cf. Landy, 1986), where *content validity* is described as whether a measure captures the full domain of content (Cronbach & Meehl, 1955; Edwards, 2003; Nunnally, 1978). The potential redundancy of popular leadership constructs calls into question their construct validities. In particular, multiple leadership constructs may show considerable overlap with each other in conceptual and empirical ways (Newman, Harrison, Carpenter, & Rariden, 2016; Shaffer, DeGeest, & Li, 2016). Conceptual redundancy refers to constructs' having similar definitions or originating from similar theories or ideas. Empirical redundancy is characterized by different constructs' being measured by similar items as well as different constructs having high correlations with each other (Le, Schmidt, Harter, & Lauver, 2010; Newman & Harrison, 2008).

The current dissertation will attempt to make five contributions to research on construct redundancy in the leadership field. First, I provide a comprehensive review of the concept of leader consideration and the creation of the Leader Behavior Description Questionnaire (LBDQ) by Ohio State University researchers. Second, I describe the development of the three most popular and scientifically impactful offshoots of leader consideration – leader-member exchange (LMX), contingent reward, and transformational leadership – along with their frequently used measures. Third, I argue that the latter leadership constructs demonstrate substantial overlap with leader consideration in terms of concept definition, item content, and empirical and nomological overlap. Fourth, I propose that the four leadership constructs potentially reflect a broader leadership factor (i.e., L factor), and contrast a conceptual model specifying this higher-order L factor against alternative conceptual models that might also describe the relationships among leadership measures. Fifth, I outline three empirical studies—including an item-level meta-analysis, a construct-level meta-analysis, and a primary data collection—in order to investigate the redundancy of these leadership constructs and estimate the incremental value of lower-order leadership factors beyond the higher-order L factor.

ORIGINS OF THE LEADER CONSIDERATION CONCEPT (LBDQ)

Early leadership research drew on evolutionary theories of heritability (Galton, 1869) and the belief that only certain individuals were capable of leading (i.e., "Great Man" theories; Carlyle, 1841). This era of leadership theorizing extended to trait perspectives on leadership, which focused on personal characteristics, including cognitive ability, personality, values, motives, skills, and expertise (Craig & Charters, 1925; Tead, 1935) of successful leaders (see reviews by Judge, Bono, Ilies, & Gerhardt, 2002; and Zaccaro, 2007). However, criticisms of the

trait approach (Mann, 1959; Stogdill, 1948) marked a shift toward behavioral approaches to leadership.

Under the direction of Dr. Carrol L. Shartle, the Personnel Research Board at Ohio State University conducted a series of studies describing leadership behaviors (Shartle, 1949; Stogdill & Shartle, 1948). Spanning a 10-year period, these studies investigated leadership problems in a variety of industries, including military, business, industrial, educational, civilian, and government organizations (Stogdill, 1950). As reviewed by Hemphill and Coons (1957), the initial research to develop a standard measure of leader behavior was guided by two questions: "(1) What does an individual do while he [sic] operates as a leader, and (2) How does he go about what he does?" (p. 6). After "extended discussions" (Hemphill & Coons, 1957, p. 8), the staff at the Personnel Research Board compiled a list of nine leadership dimensions: integration, communication, production emphasis, representation, fraternization, organization, evaluation, initiation, and domination.

Together with "members of two advanced university classes" (Hemphill & Coons, 1957, p. 9), the staff at the Personnel Research Board generated an initial pool of 1,790 items that met the following criteria: (a) described specific behavior, not general traits, (b) applied to various kinds of situations, (c) worded in meaningful terms to survey respondents, (d) applied to the dimension it was intended to measure, but could overlap with other dimensions, (e) written in present tense, (f) began with the pronoun "he," (g) only measured one behavior (i.e., not double-barreled), (h) did not contain adverbs referring to frequency of behavior (e.g., always, never, etc.), and (i) were not emotionally or evaluatively toned (Hemphill & Coons, 1957). Each of the nine dimensions was delegated to a different researcher, who decided whether or not each of the 1,790 items constituted that dimension. After group discussions regarding the quality of items,

such as the overlap of content, range of content, and general evaluative tone, 200 items were retained. In order to be used with the then-available computer technology (IBM Test Answer Sheets), 150 final items were selected (the 150 items are displayed in Appendix A). The researchers originally intended these 150 items to represent 10 underlying dimensions (i.e., the 9 dimensions listed above, with the communication dimension divided into *communication up* and *communication down*, to yield a final set of 10 dimensions).

The 150 leader descriptions were administered to a diverse sample of 357 individuals ranging from students to members of the armed forces (Hemphill & Coons, 1957). On a five-point frequency scale, the 357 participants provided ratings of the leader behaviors (i.e., 205 followers described their leaders and 152 leaders evaluated themselves). Tables 1 and 2 display the descriptive statistics and correlations for follower-ratings and leaders' self-ratings, respectively. The 10 dimensions of leader behavior each had sufficient split-half reliabilities (ranging from r = .71 to .88; Hemphill & Coons, 1957), and followers were judged to have high interrater agreement—i.e., followers "were consistent in how they described the same leader" (Fleishman, 1953, p. 2). However, in this early work the researchers noted "lack of independence of the dimensions. Most of the intercorrelations were between .50 and .80," (Fleishman, 1953, p. 2). Hemphill and Coons (1957) conducted a factor analysis (based on Thurstone's centroid method, with orthogonal rotation) of the correlations among the 10 leader behavior dimensions (Tables 1 and 2) alongside an 11th variable measuring overall evaluation of the leader on a 7-point scale (ranging from *perfect* to *poor*). From this early factor analysis, Hemphill and Coons extracted three factors, with rotated factor loadings shown in Tables 1 and 2.

The first factor was a general factor onto which all the leader behavior dimensions loaded, with two exceptions: (a) Production and Organization dimension loadings were not

reported, (b) Evaluation and Recognition dimensions had high loadings in the subordinate ratings, but low loadings in the leader self-ratings (see Tables 1 and 2). Hemphill and Coons' (1957, p. 25) "tentatively" labeled their first factor *Maintenance of Membership Character*, which was defined using the following language:

> This factor represents behavior of a leader which permits him to be considered a 'good fellow' by his subordinates. It reflects behavior which is socially agreeable to group numbers [sic]. Factor 1 carries high degree of the evaluation rating variance for subordinates' descriptions but not so for self-description. However, the loadings on the dimensions make it possible to identify this factor as one related to behavior that increases a leader's acceptability as a group member.

Hemphill and Coons' (1957) second factor was labeled *Objective Attainment Behavior*, and its two highest-loading dimensions were Production and Organization (in both subordinate ratings and in leader self-ratings; see Tables 1 and 2). Hemphill and Coons' (1957, p. 26) described this second factor saying, "This factor has to do with behavior related to the output of the group." The third factor that was extracted in Hemphill and Coons' (1957, p. 27) analysis was called *Group Interaction Facilitation Behavior*, and was characterized as "involving behavior which would enable group members to recognize their functions in the group, and to know what is going on. This factor might be called 'structuring communication.'"

In summarizing, Hemphill and Coons (1957, p. 37) drew the following conclusion:

> A more general answer to the question of 'how' leaders do their jobs might be obtained from the interpretation of the factor analysis of the leader behavior dimensions. Here three major ways of accomplishing the leadership job are found:
>
> 1. A leader may stress being a socially acceptable individual in his interactions with other group members.
> 2. A leader may stress "getting the job done." This would involve emphasis upon group production and concern with problems relative to obtaining the group's objectives.
> 3. A leader may stress making it possible for members of a group or organization to work together. Emphasis would be on the leader's job as one of a "group catalyst."
>
> These three major "hows" of leader behavior are not mutually exclusive. A given leader may utilize all of them to the same degree or he may use one at the expense of others.

Subsequently, Halpin and Winer (1957) administered the leader behavior items to a different sample of 300 Air Force crew members who provided ratings on their 52 airplane commanders. Halpin and Winer reported eliminating 20 items, "which seemed inappropriate to the air crew situation," (p. 39), leaving 130 items. Halpin and Winer conceptualized these 130 items as representing only eight underlying dimensions (in contrast to the 10 dimensions used by Hemphill and Coons). Six of these eight dimensions from Halpin and Winer corresponded with the dimensions used in the previous study conducted by Hemphill and Coons: domination, initiative, membership, organization, production, and communication (combining *communication up* and *communication down*). The three remaining underlying dimensions originally specified by Hemphill and Coons (i.e., recognition, representation, and integration) were replaced by two dimensions (i.e., *goal direction* and *leadership quality*) in the newer study by Halpin and Winer. Halpin and Winer's *leadership quality* dimension consisted of items from the previous study that were, "found to be highly correlated with several different dimensions" (p. 39). Descriptive statistics and correlations among the eight dimensions from the follower-ratings are shown in Table 3. Halpin and Winer (1957) then implemented, "a modified Wherry-Doolittle test selection procedure," and concluded that, "almost all the total variance on the 8 keys" could be explained by five of the keys: domination, organization, production, membership, and initiative (p. 40).

These five keys/dimensions were then used to calculate correlations of all 130 items with each of the five keys/dimension scores, which were then transformed to yield "orthogonal factor loadings" (the oblique factor loading matrix was multiplied by a transformation matrix computed from the correlations among the five keys). This orthogonal solution was then subjectively "rotated to meaningfulness" (Halpin & Winer, 1957, p. 40) to produce four interpretable factors.

Results from this factor analysis revealed two major factors, labeled *consideration* and *initiating structure*, as well as two minor factors, labeled *production emphasis* and *social sensitivity* (Halpin & Winer, 1957). *Consideration* referred to behaviors that reflected, "friendship, mutual trust, respect, and warmth in relationship between the leader and members of the group" (from the LBDQ manual; Halpin, 1957, p.1). *Initiating structure* described behaviors that, "establish well-defined patterns of organization, channels of communication, and ways of getting the job done" (Halpin, 1957, p.1). Consideration and initiating structure accounted for 49.6% and 33.6% of common variance, respectively, whereas production emphasis and social sensitivity accounted for only 9.8% and 7.0%, respectively (Halpin & Winer, 1957).

The findings from this early factor analysis led to the creation of the consideration and initiating structure scales on the early version of the Leader Behavior Description Questionnaire (LBDQ; Halpin, 1957). Scored on a five-point frequency scale, the final LBDQ consisted of 40 items, of which only 30 were scored (15 for each dimension). Halpin and Winer reported factor loadings (based on their original analysis of 130 items) for the subset of 15 items measuring consideration on the final 40-item LBDQ (loadings are presented in Table 4). As can be seen in Table 4, consideration items were chosen that had high factor loadings on the consideration factor and low loadings on the other factors. In three early samples, Halpin and Winer (1957) reported that consideration and initiating structure (as measured by the 15-item keys) were moderately correlated (*r* ranged from .38 to .52 across samples).[1]

[1] A similar analysis to Halpin and Winer's (1957) was carried out by Fleishman (1957), using a subset of 136 LBDQ items that had been reworded for the industrial context and labeled the Supervisory Behavior Description questionnaire. 100 International Harvester foremen rated their supervisors, and correlations were calculated between each item and four keys representing consideration, initiating structure, production emphasis, and social sensitivity (identified by Halpin & Winer, 1957). Orthogonal rotations approximated simple structure for consideration and initiating structure, but attempts at "rotating the items originally in the two minor factors into more independent clusters" were unsuccessful, leading Fleishman (1957, p. 107) to conclude, "It appeared that this might not be possible, and in the light of the high correlations between these [minor] factors and the other two [consideration,

To assess within- vs. between-leader variance in LBDQ ratings, results from one-way ANOVAs are reported by Halpin and Winer (1957), based on 201 followers rating 29 air crew commanders. I used Halpin and Winer's (1957, p. 49) variance components to estimate that for LBDQ consideration, ICC(1) = .31 [whereas for LBDQ initiating structure, ICC(1) = .13]. In other words, a sizeable portion of the variance in LBDQ ratings (i.e., approximately one-third) of the leader is due to the leader him/herself (rather than due to the rater/follower). Similarly, several studies (e.g., Fleishman, Harris & Burtt, 1955; Halpin, 1954, 1955, 1958) examined agreement among respondents and found that followers tended to have similar perceptions of the same leader, and that perceptions of different leaders diverged significantly. The 15 items on the final LBDQ that assess consideration are listed below:

1. He does personal favors for group members.
2. He does little things to make it pleasant to be a member of the group.
3. He is easy to understand.
4. He finds time to listen to group members.
5. He keeps to himself. [R]
6. He looks out for the personal welfare of individual group members.
7. He refuses to explain his actions. [R]
8. He acts without consulting the group. [R]
9. He backs up the members in their actions.
10. He treats all group members as his equals.
11. He is willing to make changes.
12. He is friendly and approachable.

initiating structure], their utility was questioned for this population. Practically all the variation could be accounted for by the two major dimensions."

13. He makes group members feel at ease when talking with them.

14. He puts suggestions made by the group into operation.

15. He gets group approval on important matters before going ahead.

Supplementary Analysis of Ohio State Data

In the section above, I reviewed the historical origins of the leader consideration construct. Nonetheless, I note that both Hemphill and Coons (1957) and Halpin and Winer (1957) conducted their classic analyses using a methodological toolkit that is now over 60 years old. As such, I reanalyzed their reported (dimension-level) correlation matrices. Using the two datasets/correlation matrices reported by Hemphill and Coons (Samples 1 and 2; 1957) and two correlation matrices from the same dataset reported by Halpin and Winer (Samples 3a and 3b; 1957), I conducted new factor analyses to investigate the factors underlying these dimensions of leader behavior. Sample 1 consisted of 205 followers rating their leaders on 150 items (correlations among 10 dimensions of leader behavior were available). Sample 2 consisted of 152 leaders rating themselves on the same 150 items and 10 dimensions (correlations among 10 dimensions of leader behavior were available). Sample 3a consisted of 300 Air Force crew members rating their leaders on 130 items and eight dimensions (correlations among eight dimensions of leader behavior were available). Sample 3b is a subset of five dimensions from Sample 3a (the same five dimensions used by Halpin and Winer to derive the classic two-factor solution). For each sample, I created scree plots and conducted parallel analysis under the common factor model using the 'paran' package in R. Scree plots and parallel analysis results are presented in Figure 1. Three of the four dimension-level correlation matrices (Samples 1, 2, and 3b) seemed to reveal a dominant first factor (i.e., ratio of first eigenvalue to second eigenvalue

exceeded 2.0, with parallel analysis signaling a one-factor solution for leader behavior), and one of the four correlation matrices (Sample 3a) seemed to indicate a two-factor solution.

These results suggest that the early dimensions of the preliminary LBDQ (i.e., dimension-level correlations) may often represent a single higher-order factor of leader behavior, in contrast to how the item-level findings from the Ohio State studies are typically interpreted. However, this is not to say that consideration and initiating structure do not properly reflect two unique styles of leader behavior. Rather, the historical point I am making is that there has always existed a dominant first factor in leader behavior ratings (see Method section, where I discuss "halo" in ratings; Fleishman, 1967; Landy, Landy, Vance, Barnes-Farrell & Steele, 1980; Viswesvaran, Schmidt & Ones, 2005). In the current dissertation, I will specify the structure of leader behavior ratings using a higher-order factor.

The LBDQ XII

After the initial LBDQ was developed, Stogdill (1963) produced an updated version of the instrument. That is, despite the early empirical analyses seeming to support the two major factors of the LBDQ (Halpin & Winer, 1957), some researchers remained dissatisfied with the instrument's simplicity, and suggested that additional dimensions could explain more variance in leader behavior (Stogdill, 1959). According to Stogdill, revised questionnaires were developed to include new items, administered to several samples, and "after item analysis, the questionnaires were revised, administered again, reanalyzed, and revised" (1963, p. 2). This procedure yielded the LBDQ Form XII which measures 12 dimensions of leader behavior and contains 100 items rated on a five-point frequency scale. The measure includes consideration and initiating structure subscales, along with 10 newer dimensions. Each of the 12 dimensions is measured by either five or 10 items, and was developed across several studies (e.g., Day, 1961; Marder, 1960; Stogdill,

1965; Stogdill, Goode, Day, 1962). Conceptually distinct from consideration and initiating structure, the 10 new dimensions are: representation, demand reconciliation, tolerance of uncertainty, persuasiveness, tolerance of freedom, role assumption, production emphasis, predictive accuracy, integration, and superior orientation (Stogdill, 1963). Consideration refers to leader behaviors that, "regard the comfort, well-being, status, and contributions of followers," (Stogdill, 1963, p. 4) and is reflected by the following 10 items from the LBDQ-XII:

1. Is friendly and approachable.
2. Does little things to make it pleasant to be a member of the group.
3. Puts suggestions made by the group into operation.
4. Treats all group members as his/her equals.
5. Gives advance notice of changes.
6. Keeps to himself/herself. [R]
7. Looks out for the personal welfare of group members.
8. Is willing to make changes.
9. Refuses to explain his/her actions. [R]
10. Acts without consulting the group. [R]

The LBDQ-XII has become one of the most commonly used instruments to measure consideration and initiating structure (Judge et al., 2004). Early research using the LBDQ-XII provided some evidence for initiating structure and consideration serving as higher-order factors of the 12 dimensions. In particular, Brown (1967) used ratings of 170 school principals (provided by 1,551 teachers) to conduct a principal axis factor analysis with varimax rotation on the 12 LBDQ-XII dimensions, extracting two higher-order factors from the LBDQ-XII (which accounted for 40% and 36% of the total variance, respectively). The first factor was clearly

reflected by initiating structure (λ = .89), production emphasis (λ = .87), and representation (λ = .78); whereas the second factor was clearly reflected by consideration (λ = .86), tolerance of uncertainty (λ = .86), and tolerance freedom (λ = .85) [the other six subdimensions (demand reconciliation, persuasiveness, role assumption, predictive accuracy, integration, and superior orientation) all cross-loaded across the two factors]. In total, it appears that the two-factor solution—specifying consideration and initiating structure factors—has emerged as the most accepted conceptualization of the factors underlying leader behavior. Beginning from the Ohio State studies in the 1950's, the concept of *leader consideration* grew prominent and was defined as displaying concern and respect for followers, paying attention to the welfare of followers, and demonstrating appreciation and support (Bass, 1990). A timeline of the development of LBDQ items is provided in Figure 11a.

OFFSHOOTS OF LEADER CONSIDERATION: LEADER-MEMBER EXCHANGE (LMX), CONTINGENT REWARD, AND TRANSFORMATIONAL LEADERSHIP

Following the work of the Ohio State researchers, numerous leadership constructs emerged, such as leader-member exchange (LMX; Dansereau, Graen & Haga, 1975; Graen, 1976; Graen & Cashman, 1975; Graen & Scandura, 1987), contingent reward, and transformational leadership (Bass, 1985, 1988; Bass & Avolio, 1990, 1993, 1995; Burns, 1978). These leadership constructs were conceptually similar to leader consideration, in that they emphasized the human relations aspect of leadership (i.e., interpersonal consideration), as opposed to focusing on the task and clarifying job requirements (i.e., initiating structure). These newer leadership concepts appear to echo the concept of leader consideration, but were informed by different theories of leadership. In the following section, I outline the theoretical and empirical origins of LMX, contingent reward, and transformational leadership.

Leader-Member Exchange (LMX)

Theory of LMX. In contrast to the notion of an average leadership style assumed by the progenitors of the leader consideration construct, the originators of LMX argued that a leader does not behave in the same way toward all followers (Dansereau et al., 1975). To elaborate, average leadership style views the variance around members' interpretations of the leader as error (Graen, Dansereau, Minami, Cashman, 1973), but LMX proposes that meaningful heterogeneity exists in members' perceptions of the same leader (Dansereau, Cashman, Graen, 1973). Rather than focusing solely on the leader or the follower, LMX theory highlights the dyadic relationship between the two parties and the development of the relationship over time. The concept of LMX originates with Vertical Dyad Linkage (VDL) theory, which states that leaders have varying relationships with different members, and that members have dissimilar interpretations and reactions to the same leader (Dansereau et al., 1975; Graen & Cashman, 1975). According to Graen and colleagues, followers who can be trusted, demonstrate competence, and are motivated to take on greater work responsibilities are chosen by leaders to join the in-group. In-group members are able to make meaningful work contributions, strive beyond formal job requirements, benefit from more support and attention from leaders, and develop high *exchange quality* (defined below) with the leader. On the other hand, followers who are not selected by the leader constitute an out-group, are limited to performing ordinary work tasks, and have low exchange quality with the leader.

Stemming from the notion of mutual reciprocation of behaviors, intentions, and feelings proposed in social exchange theory (Blau, 1964), LMX theory describes the exchange quality between two parties. In particular, LMX refers to the degree of mutual trust, respect, and obligation between the leader and follower (Graen & Uhl-Bien, 1995) which evolves over three

stages (Graen & Scandura, 1987). During stage 1 (role taking), the leader examines a member's characteristics and introduces a role, to which the member responds. Then in stage 2 (role making), the terms of the relationship begin emerging after each party has provided the other with feedback on the role. Finally in stage 3 (role routinization), the leader and member form clear expectations about the role and each other, thus stabilizing the relationship.

It is worth noting that the original research on LMX *explicitly measured LMX via the LBDQ* (Dansereau, Cashman & Graen, 1973; Graen, Dansereau, & Minami, 1972a, 1972b; Katerberg & Hom, 1981). These early LMX papers also referred to the LMX construct as individual-level *consideration*. As such, LMX and LBDQ consideration share a common conceptual and empirical origin.

In a later section, I will discuss transactional (contingent reward) and transformational leadership. But for the moment, I will mention that LMX contains transactional and transformational components, such that the dyadic relationship typically begins as a transactional process and gradually evolves into a more transformational exchange (Graen & Uhl-Bien, 1995; Yukl, 1989). In the early stages of the relationship, social and material exchange occur due to a member's formal obligation to the leader. Later if rapport is built, the relationship matures in that the leader motivates the member to strive beyond self-interest and act for the greater good of the group. However, it is possible that LMX may not progress beyond the formal transactional stage, as in the case of out-group members.

Measurement of LMX. The measurement of LMX has evolved over the years, beginning with use of the LBDQ from the Ohio State studies (analyzed at the individual follower level-of-analysis), followed by many different measures that were predecessors to the LMX-7 (Scandura & Graen, 1984), and more recently with the LMX-7 and a multidimensional measure of LMX

(LMX-MDM; Liden & Maslyn, 1998)—which are used by almost all contemporary LMX researchers [see Schriesheim, Castro, & Cogliser (1999) and Joseph, Newman & Sin (2011) for a longer review of the history of LMX measurement].

The earliest LMX studies explicitly used the leader consideration factor from the LBDQ (e.g., Dansereau et al., 1973; Graen, Dansereau & Minami, 1972; Katerberg & Hom, 1981) by selecting items such as, "he is easy to understand," "he keeps to himself," and "he is friendly and approachable" (Bernerth, Armenakis, Feild, Giles & Walker, 2007). After this, precursors to the LMX-7 included a variety of shorter instruments such as the two-item Negotiating Latitude scale (Dansereau et al., 1975), the LMX-4 (Graen & Cashman, 1975; Liden & Graen, 1980), and the LMX-5 (Graen et al., 1982). The term *negotiating latitude* suggests that leaders who are more willing to accommodate followers' requests in role development are in essence granting followers greater autonomy or latitude for negotiation. Negotiating Latitude was measured on a four-point scale with these two items:

1. How flexible do you believe your supervisor is about evolving changes in your job activity structure (he sees no need for change, he sees little need for change, he is lukewarm about change, he is enthusiastic about change).
2. Regardless of how much formal authority your supervisor has built into his position, what are the chances that he would be personally inclined to use his power to help you solve problems in your work (no chance, he might or might not, he probably would, he certainly would).

Extending the Negotiating Latitude scale, the LMX-4 (Graen & Cashman, 1975; Liden & Graen, 1980) added the following two items with four response options:

1. To what extent can you count on your supervisor to "bail you out," at his expense, when you really need him (he certainly would, he probably would, he might or might not, not at all).
2. How often do you take your suggestions regarding your work to your supervisor (almost always, usually, seldom, never).

After this, a *centroid item* assessing the dyadic relationship was included in the measure, which resulted in the LMX-5:

1. How would you characterize your working relationship with your supervisor (extremely effective, better than average, about average, less than average)?

Subsequently, these items were modified and new items were generated to develop the LMX-7 (Graen, Novak, & Sommerkamp, 1982; Scandura & Graen, 1984) which became one of the most widely used instruments to measure LMX (Gerstner & Day, 1997; Schriesheim, Castro & Cogliser, 1999). The LMX-7 contains the following seven items measured on a five-point scale:

1. Do you know where you stand with your leader…do you usually know how satisfied your leader is with what you do? (rarely – very often)
2. How well does your leader understand your job problems and needs? (not a bit – a great deal)
3. How well does your leader recognize your potential? (not at all – fully)
4. Regardless of how much formal authority s/he has built into his/her position, what are the chances that your leader would use his/her power to help you solve problems in your work? (none – very high)
5. Again, regardless of the amount of formal authority your leader has, what are the chances that s/he would "bail you out," at his/her expense? (none – very high)

6. I have enough confidence in my leader that I would defend and justify his/her decision if s/he were not present to do so. (strongly disagree – strongly agree)
7. How would you characterize your working relationship with your leader? (ineffective-effective)

Despite its prevalence, the LMX-7 is problematic for two reasons. First, a review of LMX measurement argued that many scales (including the LMX-7), "were developed on an ad hoc basis or modified from existing measures without adequate psychometric testing" (Schriesheim et al., 1999, p. 94). Second, there has been a troubling disconnect between the theoretical notions and item content of LMX. Specifically, LMX theory is founded on the dyadic relationship between a leader and member, but six of the seven actual items in the LMX-7 scale do not use a dyad-level referent to reflect this exchange. In fact, only one item in the LMX-7 contains the leader-follower "relationship" as the referent, while the remaining six items refer to beliefs and expectations about "the leader."

Unlike the LMX-7, a multidimensional measure of LMX was later created using content validation procedures (Anderson & Gerbing, 1991; Hinkin, 1995; Schreisheim et al., 1993). Liden and Maslyn (1998) developed a 12-item multidimensional measure of LMX (LMX-MDM) consisting of four dimensions. Using previous leadership literature, the authors first generated 80 items to reflect Dienesch and Liden's (1986) three dimensions: *affect, loyalty,* and *contribution*. Then, 40 more items were created to reflect two more dimensions, *trust* and *respect*, which emerged after interviewing 24 business graduate students about personal experiences with work supervisors. The resulting pool of 120 items were subjected to content validation in two phases. In the first phase, eight faculty and PhD students of organizational behavior served as expert judges and categorized the 120 items into the five a priori dimensions. However, results

indicated that the distinction between trust and professionalism was unclear, so 20 items were dropped, along with the trust dimension. In the second phase, six faculty and PhD students of organizational behavior served as expert judges and sorted the 100 items into the four dimensions. Thirty-eight items demonstrated agreement from at least five out of the six judges and were retained. Four more items were written in order to sufficiently reflect the respect dimension. Liden and Maslyn (1998) reviewed this new pool of 42 items and deleted items that did not describe the exchange between leaders and members but instead reflected another concept (e.g., perceived similarity).

Liden and Maslyn (1998) administered the resulting 31 items to 302 working students. Five items that were significantly correlated with acquiescence and social desirability were dropped. Next, principal components analyses revealed that four factors explained 79.4% of the variance, so the authors included only these four factors (11 items) in further analyses. Based on responses from 249 employees, confirmatory factor analysis (CFA) demonstrated good model fit for the four-factor solution. Table 5 contains CFA results reported by Liden and Maslyn (1998). Descriptive statistics are displayed in Table 6. The dimensions affect, loyalty, contribution, and respect were robustly correlated with LMX-7 (.71, .71, .55, and .70, respectively), providing evidence of convergent validity. Additionally, discriminant validity was demonstrated in that satisfaction with coworkers was weakly correlated with affect, loyalty, contribution, and respect (.12, .25, .00, and .00, respectively). The dimensions also exhibited criterion-related validity and were related to several outcomes, including organizational commitment, autonomy, satisfaction with work, satisfaction with supervisor, turnover intentions, and performance. Validated in a separate sample of 24 college students and 227 production workers and engineers from two organizations, the authors later created another item for the contribution dimension. The four

dimensions of the LMX-MDM are each indicated by three items on a seven-point agreement scale. *Affect* describes the followers' interpersonal liking of the leader.

1. I like my supervisor very much as a person.
2. My supervisor is the kind of person one would like to have as a friend.
3. My supervisor is a lot of fun to work with.

Loyalty refers to the leader's inclination to advocate for and stand by the follower.

4. My supervisor defends my work actions to a superior, even without complete knowledge of the issue in question.
5. My supervisor would come to my defense if I were "attacked" by others.
6. My supervisor would defend me to others in the organization if I made an honest mistake.

Contribution involves followers' readiness to exert additional effort for the sake of their leader.

7. I do work for my supervisor that goes beyond what is specified in my job description.
8. I am willing to apply extra efforts, beyond those normally required to meet my supervisor's work goals.
9. I do not mind working my hardest for my supervisor. (new item)

Respect (or professionalism) is defined as followers' esteem for their leader's ability.

10. I am impressed with my supervisor's knowledge of his/her job.
11. I respect my supervisor's knowledge of and competence on the job.
12. I admire my supervisor's professional skills.

As one drawback, these four dimensions exhibited large correlations with each other (often above .60), which has led some authors to conclude that the LMX-MDM is best treated as a measure of the single, higher-order LMX factor (Joseph et al., 2011).

The correlation between the LMX-MDM overall factor and the LMX-7 is remarkably high, implying the LMX-7 and LMX-MDM are alternate forms measuring the same construct (Joseph et al., 2011). Indeed, one study found LMX-7 and LMX-MDM to be correlated $r = .80$ (Maslyn & Uhl-Bien, 2001) and another study reported a correlation of $r = .77$ (Greguras & Ford, 2006). Although the robust correlations signal that the same broad construct is being measured, the LMX-7 and the LMX-MDM do so via different samples of item content. According to Joseph et al. (2011), the only clear similarities across the two measures are between "my supervisor would defend me" (LMX-MDM) and "s/he would bail me out" (LMX-7), and between "I respect my supervisor's competence" (LMX-MDM) and "I have enough confidence in my supervisor that I would defend and justify his/her decision…" (LMX-7). A likely explanation to reconcile the near-unity correlation but disparate content validity is that LMX-7 and LMX-MDM are reflecting a broader domain but each sampling from different content domains (Joseph et al., 2011). Nevertheless, because LMX-7 and LMX-MDM are the most frequently used scales to measure LMX (Joseph et al., 2011), I examine these two measures in the present study. A timeline of the development of LMX items is illustrated in Figure 11b.

Contingent Reward and Transformational Leadership

Theories of Contingent Reward and Transformational Leadership. Following LMX, some of the most popular contemporary leadership theories come from the Full-Range Leadership Model (Avolio & Bass, 1991; Avolio, 1999; Bass, 1985), which includes transactional, transformational, and laissez-faire leadership styles. Transactional leadership involves motivating followers through an exchange process in which rewards and punishments are provided depending on performance (Avolio & Bass, 1991; Avolio, 1999; Bass, 1985). According to the Full-Range Leadership Model, transactional leadership is measured by

contingent reward – clarifying followers' role expectations and rewarding specific behaviors, and *management-by-exception* – maintaining the status quo and taking corrective action. Management-by-exception can be distinguished into active and passive components based on the time when the leader intervenes in work activities (Howell & Avolio, 1993). Active management-by-exception describes intervention before problems turn serious, whereas passive management-by-exception refers to intervention after conflicts have already arisen.

Although the Full-Range Leadership Model considered contingent reward and management-by-exception to both be features of transactional leadership, recent scholars have found that these reflect different constructs and are only weakly correlated with each other (Antonakis & House, 2014). For example, contingent reward and active management-by-exception are correlated $r = .27$, contingent reward and passive management-by-exception are correlated $r = -.25$, and active and passive management-by-exception are correlated $r = -.05$ (Antonakis & House, 2014). Other research has proposed that management-by-exception is a type of passive leadership (Den Hartog, Muijen & Koopman, 1997; Druskat, 1994; Yammarino & Bass, 1990) and more similar to *laissez-faire leadership* – the avoidance or lack of leadership (Avolio, 1999; Bass, 1985). Moreover, active and passive management-by-exception have inconsistent relationships with criteria and are often separated from contingent reward when measuring transactional leadership (e.g., Judge & Piccolo, 2004; Piccolo, Bono, Heinitz, Rowold, Duehr, Judge, 2012). Following the practices of recent leadership scholars, I therefore operationalize transactional leadership with just the contingent reward facet.

On the other hand, transformational leadership involves encouraging followers to go beyond their self-interest in order to fulfill higher order needs. First proposed by Burns (1978) in the field of political science, transformational leadership extends transactional leadership by

acknowledging the need for exceptional leadership during poor economic conditions. Whereas transactional leaders satisfy followers' needs by exchanging rewards and behaviors, transformational leaders raise awareness about and addresses greater psychological needs (Bass, 1985). Transformational leaders, "arouse and satisfy higher needs, engage in the full person of the follower" (Bass, 1985, p. 14) and "motivate us to do more than we originally expected to do" (Bass, 1985, p. 20). In fact, researchers suggest that transformational leadership augments transactional leadership by explaining incremental variance in several work outcomes (Bass, 1985; Seltzer & Bass, 1987; Waldman, Bass & Einstein, 1985). Over the years, the transformational style of leadership has been described using several labels, such as, "charismatic," "visionary," and "inspirational" leadership (Bass 1985; Bennis & Nanus, 1985; Boal & Bryson, 1988; Burns 1978; Conger & Kanungo 1987; House 1977; Kuhnert & Lewis 1987; Sashkin, 1988; Shamir, House & Arthur, 1993; Tichy & Devanna, 1986).

Transformational leadership is commonly conceptualized using four subfacets: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Initially, the first two subfacets, *idealized influence* and *inspirational motivation* were collectively referred to as "charisma," (Bass, 1985) but are now distinguished from each other. *Idealized influence* refers to behaving in an admirable manner and serving as a role model to followers. More recently, idealized influence has been further divided into two subcomponents: *attributes* (i.e., personal characteristics such as self-confidence, charisma, and commitment to beliefs) and *behaviors* (i.e., actions stemming from the personal characteristics that evoke trust and respect from followers; Bass & Avolio, 1990; 1993). *Inspirational motivation* consists of articulating an appealing vision and motivating followers to act beyond what is expected. *Intellectual stimulation* is defined as challenging the status quo, taking risks, and asking

followers to contribute novel ideas. *Individualized consideration* describes acting as a mentor and thoughtfully addressing followers' personal needs (and its name even acknowledges the leader consideration construct from the Ohio State studies). The four subfacets of transformational leadership have a very high average meta-analytic correlation with each other (average ρ = .78; Lowe, Kroeck & Sivasubramaniam, 1996) and appear to similarly and collectively represent the higher-order factor of transformational leadership (Carless, 1998; Judge & Bono, 2000).

Measurement of Contingent Reward and Transformational Leadership. Contingent reward and transformational leadership are predominantly measured by the Multifactor Leadership Questionnaire (MLQ; Bass & Avolio, 1995) and the Transformational Leadership Inventory (TLI; Podsakoff, Mackenzie, Moorman, & Fetter, 1990). The creation of the MLQ originated with surveying 78 executives about their personal experiences with influential leaders who motivated followers to act beyond their own self-interest. This resulted in 142 leadership descriptions which were categorized by 11 judges (i.e., MBA and social sciences graduate students) into transactional, transformational, or "can't say." Seventy-three items demonstrated at least 80% agreement among the judges' categorizations and were retained. These 73 items were administered on a five-point frequency scale to two subsamples, 104 military officers and 72 senior military officers. The 73 items along with the means and variances are presented in Appendix B. A principal components analysis with varimax rotation revealed five factors: three transformational factors and two transactional factors. Results from the first sample of 104 participants indicated seven factors with eigenvalues above 1.0. However, when the second sample of 72 participants was included, the latter two factors had eigenvalues that fell below 1.0 and were removed. Out of the five remaining factors, transformational factors consisted of

charisma, intellectual stimulation, and individualized consideration; transactional factors included contingent reward and management-by-exception. Analyses were conducted on one subsample (N = 104) and on both samples combined (N = 176). Results are presented in Table 7.

A higher-order factor analysis revealed two factors: active-proactive leadership and passive-reactive leadership (Bass, 1985). Results are displayed in Table 8. Notably, the first higher-order factor, active-proactive leadership, was reflected with large factor loadings by: charisma (λ = .90), contingent reward (λ = .78), individualized consideration (λ = .84), and intellectual stimulation (λ = .72). The second higher-order factor, passive-reactive leadership, was only indicated by management-by-exception (λ = .44). Overall, this set of results implies that transformational leadership is indicated by three active dimensions, whereas transactional leadership is measured by one active dimension (contingent reward) and one passive dimension (management-by-exception). It also reveals that transformational leadership dimensions and contingent reward can load quite highly onto a common factor.

Subsequent studies demonstrated that specific factors could be extracted from an early version of the MLQ. Factor analysis revealed that *management-by-exception* contained *active* and *passive* sub-facets, and charisma was split into *idealized influence* and *inspirational motivation* (Hater & Bass, 1988). Later researchers found that idealized influence was reflected by *behavior* and *attribute* subfacets (Bass & Avolio, 1990, 1993; House, Spangler & Woycke, 1991; Hunt, 1991). All of this empirical work culminated into one of the most widely used instruments to measure transformational and transactional leadership, the MLQ Form 5X.

Despite its popularity, some scholars argue that the MLQ-5X has some conceptual and psychometric weaknesses. Yukl (1999) has criticized the theory of transformational leadership, arguing that its dimensions are not clearly defined. Specifically, the individualized consideration

dimension reflects both supporting and developing leader behaviors, but the intellectual stimulation and idealized influence dimensions contain heterogeneous and vague content (Yukl, 1999). Furthermore, research has found high intercorrelations among the dimensions of transformational leadership, implying their lack of discriminant validity from each other (r = .81 – 90; Bycio, Hackett & Allen, 1995). Another troubling issue is that leadership scholars have unsystematically modified the MLQ by dropping items, creating new items, and using various forms of items (Tejeda, Scandura & Pillai, 2001).

The second popular measure of transformational leadership is the Transformational Leadership Inventory (TLI; Podsakoff et al., 1990), which consists of six dimensions: high performance expectations, individualized support, intellectual stimulation, articulating a vision, providing an appropriate model, and fostering acceptance of group goals. To develop the instrument, Podsakoff et al. (1990) first generated "approximately 100" items based on extant literature on transformational leadership (p. 113). Then the authors conducted a Q-sort in which 12 experts categorized items into the six dimensions (or a seventh dimension, "other"). Twenty-three items exhibited at least 80% agreement among the experts and were retained. Confirmatory factor analysis indicated four major factors [i.e., high performance expectations, individualized support, intellectual stimulation, and a second-order factor called "core" transformational behaviors (CTB) consisting of the three remaining first-order factors (i.e., articulating a vision, providing an appropriate model, and fostering acceptance of group goals); Podsakoff et al., 1990]. Results are shown in Table 9. Interestingly, other researchers later argued that two of the dimensions, individualized support and intellectual stimulation, do not indicate transformational behaviors (House & Podsakoff, 1994). In addition to the transformational leadership items, the full TLI also contains five items from Podsakoff, Todor, Grover, and Huber's (1984) contingent

rewards scale, which are used to measure transactional leadership. The 28 items of the TLI (23 transformational items and five transactional items) are rated on a seven-point agreement scale.

Although transformational leadership is similar to leader consideration in that both involve relationship-oriented behaviors, researchers have sometimes claimed that the two should be distinguished from each other. For example, consideration as measured by the LBDQ emphasizes leader friendliness and follower participation in decision making, whereas the MLQ highlights follower development and individual needs (Bass, Avolio & Atwater, 1996). Some researchers have also attempted to articulate a conceptual distinction between MLQ-individualized consideration and LBDQ-consideration, by stating that the former specifically represents directive actions that push followers to transcend their self-interest to meet higher standards of performance (Bass, 1999). Additionally, some research has suggested that transformational leadership measured by the MLQ accounts for incremental variance in leadership effectiveness above and beyond initiating structure and consideration measured by the LBDQ (Bass, 1999). During its conception, the Full Range Leadership Model was developed using theory that was in some ways distinct from (i.e., expanded upon) the theory underlying the Ohio State studies, resulting in contingent reward and transformational leadership. The timeline of the development of MLQ and TLI items is illustrated in Figure 11c.

OVERLAP BETWEEN LEADER CONSIDERATION AND EACH OFFSHOOT

After the LBDQ was established by Ohio State researchers to measure leader consideration, other leadership theories and corresponding measures have been developed to assess purportedly disparate leadership constructs, including LMX, contingent reward, and transformational leadership. These newer leadership constructs claimed to theoretically and empirically tap into concepts different from LBDQ leader consideration. However, distinctions

among the multiple operationalizations of leadership are sometimes ambiguous, and upon closer examination it appears likely that items from different scales designed to assess ostensibly different constructs may in fact be largely assessing the classic construct of leader consideration.

Construct Redundancy and Construct Mixology

In psychological research, redundant constructs can suffer from the jingle-jangle fallacy (Kelley, 1927). The jingle fallacy occurs when different constructs are assigned the same label, and the jangle fallacy refers to giving multiple labels to the same construct. In particular, the jangle fallacy is committed when researchers propose seemingly new constructs and develop new measures without taking into account similar existing constructs. This can have both positive and negative consequences (Newman, Joseph, Sparkman & Carpenter, 2011). On one hand, reinventing and relabeling constructs can draw renewed interest and revive research in older domains. On the other hand, scientific progress is hindered in that old research on the same concept is ignored, and the ambiguity created by using different construct labels for the same or similar constructs generates confusion.

An example of the jangle fallacy in organizational research is the relatively new construct of employee engagement. Engagement is characterized as a positive and fulfilling work-related state of mind (Schaufeli & Bakker, 2003), and some scholars have claimed that engagement contains new elements not present in older attitudinal constructs (Macey & Schneider, 2008). However, Newman and Harrison (2008) suggested that engagement appears to be measuring an overall attitude factor and combines several extant job attitudes (i.e., job satisfaction, job involvement, organizational commitment, and job affect). Specifically, Newman and Harrison (2008) illustrate that all of the items from the popular Utrecht Work Engagement Scale (Schaufeli & Bakker, 2003) are similar or identical to corresponding items from well-known

measures of job satisfaction, organizational commitment, job involvement, and job affect). Newman, Joseph, and Hulin (2010) further demonstrated (via meta-analysis) that a higher-order construct (labeled the 'A factor' of job attitudes) reflected by a combination of job satisfaction, organizational commitment, and job involvement was correlated $\rho = .77$ with the Utrecht Work Engagement Scale, further confirming the idea that employee engagement is essentially a new blend of old constructs.

Construct redundancy is also a problem in personality research, in that multiple constructs claiming to be distinct have been shown to share a common core. One prime example is the construct known as grit (Duckworth, Peterson, Matthews, & Kelly, 2007; Duckworth & Quinn, 2009). Although the grit concept (like employee engagement) has enjoyed a great deal of popularity in both the business and academic press, recent meta-analytic evidence shows a disattenuated correlation of $\rho = .84$ between grit and the classic Big Five trait of conscientiousness (Crede, Tynan, & Harms, 2016). So in large part, the grit concept appears to be a successful relabeling of content borrowed from the domain of conscientiousness.

A related issue in research of organizational behavior (OB) and human resource (HR) management is the practice of combining old constructs to create new constructs, a practice coined *construct mixology* by Newman et al (2016). These authors suggested that a compound construct formed via construct mixology is merely the mathematical and substantive sum of its parts. Even though the compound construct fails to yield new empirical knowledge, it may reconfigure existing empirical knowledge, which Newman et al. (2016) contend is a potentially meaningful contribution to scientific knowledge. The key issue that determines whether construct mixology is a scientifically progressive (versus degenerate) practice is whether the

newer, compound constructs acknowledge (versus disavow) the existing, constituent constructs from which they were formed.

Newman et al. (2016) praise the development of the core-self evaluations (CSE) construct as an ideal exemplar for how construct mixology should be conducted. For example, Judge, Locke and Durham (1997) proposed that self-esteem, locus of control, neuroticism, and generalized self-efficacy collectively make up a broader concept, CSE, defined as fundamental beliefs individuals hold about themselves. In another study, Judge, Locke, Durham and Kluger (1998) found that CSE, as indicated by the four specific traits, predicted job satisfaction and life satisfaction. Judge, Erez, Bono and Thoresen (2002) later empirically demonstrated that the four constituents traits were highly interrelated, loaded strongly onto a common factor, exhibited poor discriminant validity from each other, and exhibited little incremental variance in predicting external criteria. These steps in building evidence for the higher-order construct of CSE provide an ideal model for how relationships among partly-redundant concepts should be handled in the creation of a new, compound construct that simply reflects a combination of old content.

Beyond praising the approach of Judge et al. (2002) and asserting that constituent constructs should be explicitly acknowledged and modeled when introducing a new compound construct, Newman et al. (2016) pointed out another advantage of using broad, compound constructs (as classically noted by Cronbach & Gleser, 1957). In particular, Newman et al. noted that compared to subordinate constructs, broad compound constructs typically have stronger predictive utility. Prime examples of such compound constructs include work engagement (Christian, Garza & Slaughter, 2011), core self-evaluations (Judge et al., 2003), and mixed emotional intelligence (Joseph, Jin, Newman & O'Boyle, 2015). To summarize, forming compound constructs can be advantageous in that it promotes parsimony in studying partly-

redundant constituent concepts, while simultaneously enhancing predictive utility (Newman et al., 2016).

Newman and colleagues (2016) also conducted a review of the most impactful constructs in OB and HR research, and concluded that most constructs were sampled from seven cardinal construct domains, as described below. The A factor (i.e., overall job attitude/work engagement) consists of job satisfaction, organizational commitment, job involvement, and job affect. The G factor (i.e., general mental/cognitive ability) consists of numerical intelligence, verbal intelligence, spatial intelligence, and emotional intelligence. The E factor (i.e., behavioral engagement) consists of job performance, organizational citizenship behavior (OCB), and counterproductive work behavior (CWB)/withdrawal. The X factor (i.e., social exchange quality) consists of procedural justice, distributive justice, trust, and perceived organizational support. The S factor (i.e., core self-evaluations) consists of self-efficacy, self-esteem, emotional stability, and locus of control. The J factor (i.e., job complexity) consists of job autonomy, skill variety, task significance, task feedback, and social support. Finally, the L factor (i.e., leader consideration), which is the focus of the current dissertation, consists of LMX, transformational leadership, transactional leadership, and satisfaction with supervisor.

Different Notions of Construct Redundancy

Construct redundancy can be viewed in four ways: concept definition, item content, empirical overlap, and nomological overlap. First, two constructs can share a theoretical origin and have identical or similar conceptual definitions. Because there is sometimes a gap between the construct definition and what is actually being measured, the second step in evaluating construct redundancy is to examine the actual items of the measures. Items on measures of two different constructs may have the same or overlapping content. A number of items from both

measures may contain similar or identical behaviors, attitudes, and cognitions. Third, empirical findings can indicate empirical overlap—i.e., instruments designed to measure two constructs are very strongly correlated, suggesting weak discriminant validity. Finally, nomological overlap (i.e., demonstrating relationships of similar magnitudes and directions with various correlates) can also indicate redundancy between constructs. In the following section, I argue that LMX, contingent reward, and transformational leadership are largely redundant with leader consideration, using these four notions of construct redundancy.

Consideration and LMX

Concept definition. The overlap between consideration and LMX begins with the definitions themselves, which are strikingly similar and share a common origin. Consideration describes behaviors that demonstrate, "friendship, mutual trust, respect, and warmth in relationship between the leader and members of the group" (Halpin, 1957, p.1) and that "regard the comfort, well-being, status, and contributions of followers," (Stogdill, 1963, p. 4). In proposing the concept of LMX, Graen and Cashman (1975) suggest that, "relationships must be developed carefully over an extended period of time (e.g., mutual trust must be earned by both parties)" (p. 144). LMX attempts to make a conceptual contribution by focusing on, "the vertical dyad and the relationship between a superior and a member contained in a dyad" (Dansereau et al., 1975; p. 47), under the premise that leaders do not behave identically toward all followers. The earliest conceptualization of LMX took the form of *negotiating latitude*, such that, "the greater the latitude initially given to the member to negotiate job-related matters, the higher the probability that the superior is attempting leadership and the lower the probability that he is using supervision with his member" (Dansereau et al., 1975, p. 50). The term negotiating latitude was soon relabeled as LMX and characterized by, "reciprocal influence, extracontractual

behavior exchange, mutual trust, respect and liking, and common fate" (Graen & Schiemann, 1978, p. 206). The chief conceptual distinction between LMX and LBDQ consideration in the early research papers was a levels-of-analysis distinction (i.e., LMX varies across followers within–leaders, whereas LBDQ varies between-leaders, and treats within-leader variance as random error; Dansereau, Cashman, & Graen, 1973). However, the *content* of LMX is nearly identical to LBDQ consideration (compare the Halpin, 1957, and Graen & Schiemann, 1978, definitions quoted above). Explicitly stated in both definitions (consideration and LMX) is *mutual trust*. Both definitions also involve the leader and follower exhibiting respect and friendship/liking to the other party. This suggests that LMX has substantial overlap with consideration, in terms of its conceptual definition.

Item content. The scales measuring consideration and LMX also appear to have similar item content. For example, the LBDQ item, "I look out for the personal welfare of group members," is echoed by the LMX items: "again, regardless of the amount of formal authority your leader has, what are the chances that s/he would 'bail you out,' at his/her expense?" (LMX-7), and "my supervisor would come to my defense if I were 'attacked' by others" (LMX-MDM). These items all tap into the idea of the leader's displaying concern for the well-being of followers. As another example where an LMX item is similar to an LBDQ item, "I do little things to make it pleasant to be a member of the group" (LBDQ) parallels "my supervisor is a lot of fun to work with" (LMX-MDM). These items both refer to followers' feeling enjoyment in working with the leader. Additionally, "I am friendly and approachable" (LBDQ) and "my supervisor is the kind of person one would like to have as a friend" (LMX-MDM) are somewhat similar in content. These items both refer to feeling a personal connection with the leader and

viewing the leader affectionately like a friend. In sum, the LBDQ, LMX-7, and LMX-MDM appear to have overlapping item content.

Empirical overlap and nomological overlap. Finally, consideration and LMX appear to be empirically similar. In fact, before a separate LMX scale had been developed, many early studies actually utilized the LBDQ to assess LMX (e.g., Dansereau et al., 1973; Graen et al., 1972; Graen, Dansereau, Minami & Cashman, 1973; Katerberg & Hom, 1981). Furthermore, LBDQ-Consideration and LMX are strongly correlated (meta-analytic ρ = .74; Gottfredson & Aguinis, 2016) which is consistent with the view that, when level of analysis is held constant, LMX is primarily a relabeling of leader consideration (Joseph, et al., 2011).

Furthermore, several meta-analyses have demonstrated that consideration and LMX have similar relationships with correlates (i.e., nomological overlap), including OCB (consideration ρ = .32, Organ & Ryan, 1995; LMX ρ = .37, Ilies et al., 2007), follower job satisfaction (consideration ρ = .46, Judge et al., 2004; LMX ρ = .49, Dulebohn et al., 2012), organizational commitment (consideration ρ = .34, Mathieu & Zajac, 1990; LMX ρ = .47, Dulebohn et al., 2012), job performance (consideration ρ = .28, Judge et al., 2004; LMX ρ = .30, Martin, Guillaume, Thomas, Lee & Epitropaki, 2016), role conflict (consideration ρ = -.42, Jackson & Schuler, 1985; LMX ρ = -.42, Dulebohn et al., 2012), and role ambiguity (consideration ρ = -.44, Jackson & Schuler, 1985; LMX ρ = -.33, Dulebohn et al., 2012). Overall, the robust correlation between LMX and consideration, and the similar nomological networks, provide some evidence that consideration and LMX might be empirically redundant.

Consideration and Contingent Reward

Concept definition. According to Bass (1985), "Transactional leadership is contingent reinforcement. The leader and follower agree on what the follower needs to do to be rewarded or

to avoid punishment" (p. 121). Furthermore, "The exchange should not be a cold transaction of reward for compliance with agreements reached or punishment for failure to comply. Leaders must give reassurance of their continuing esteem for their subordinate regardless of what happens" (p. 123). Bass also suggests that, "brief praise for reaching such goals should be given as close to the time of reaching the goals as possible. Sincere encouragement should be provided for subsequent performance" (p. 123). By providing praise and sincere encouragement, transactional leaders behave in ways that demonstrate warmth and account for the well-being and contributions of followers, which is also key to the definition of leader consideration.

Item content. There appears to be little overlap in item content between measures of contingent reward (MLQ; Bass & Avolio, 1995; TLI; Podsakoff et al., 1990) and LBDQ consideration. In particular, the LBDQ items tend to focus on member voice, informational justice, leader friendliness and sociability, and making it pleasant to be a member of the group; whereas contingent reward measures tend to focus on recognition and praise for good performance, as well as clarifying expectations upon which rewards depend. In a stretch, it might be possible to characterize contingent reward as "contingent consideration," to the extent that a leader's provision of recognition and praise (contingent on performance) could be construed as friendliness and as making it pleasant to be in the group.

Empirical overlap and nomological overlap. Past research has demonstrated empirical overlap between consideration and contingent reward. Bass (1999) argued that Seltzer and Bass' (1990) findings demonstrated that consideration "may substitute for transactional leadership" (p. 14). In two primary studies, Piccolo et al. (2012) found that contingent reward and consideration were strongly correlated $r = .63$ ($N = 355$) and $r = .64$ ($N = 1{,}269$).

Meta-analyses examining consideration (Judge et al., 2004) and contingent reward (Judge & Piccolo, 2004) revealed similar nomological networks, although with differing effect sizes in many instances. Consideration and contingent reward demonstrated moderate to strong corrected correlations, respectively, with follower job satisfaction (ρ = .46; ρ = .64), follower satisfaction with leader (ρ = .78; ρ = .55), follower motivation (ρ = .50; ρ = .59), leader job performance (ρ = .25; ρ = .45), group-organization performance (ρ = .28; ρ = .16), and leader effectiveness (ρ = .52; ρ = .55; Judge et al., 2004; Judge & Piccolo, 2004).

Consideration and Transformational Leadership

Concept definition. Consideration and transformational leadership exhibit a large amount of conceptual overlap. In particular, there is theoretical resemblance between *consideration* and the *individualized consideration* facet of transformational leadership. Individualized consideration from the MLQ is defined as, "understanding the needs of each follower and works continuously to get them to develop to their full potential" (Avolio et al., 1999, p. 443) and leaders' "giving special attention to neglected members, treating each of their subordinates individually, and expressing appreciation for well done work" (Bass, 1985, p. 82). The *individualized support* facet from the TLI is characterized as, "behavior on the part of the leader that indicates he/she respects followers and is concerned about their personal feelings and needs" (Podsakoff et al., 1990, p. 112). Consideration and so-called individualized consideration (from transformational leadership) may both result in cultivating personal relationships with followers (Piccolo et al., 2012). Indeed, Yukl, Gordon and Taber's (2002) taxonomy of leadership dimensions categorizes both consideration and the individualized consideration and individualized support dimensions of transformational leadership as belonging to a broader category of leader behaviors labeled "supporting," specifically designating LBDQ-consideration,

MLQ-individualized consideration, and TLI-individualized support as members of the same behavioral category.

Item content. The scales measuring consideration and transformational leadership appear to have overlapping item content. For example, "Looks out for personal welfare of group members" (LBDQ) and "Behaves in a manner thoughtful of my personal needs" (TLI). These items describe demonstrating care for followers' well-being and personal feelings. Moreover, "I do little things to make it pleasant to be a member of the group" (LBDQ) and "I make others feel good to be around me" (MLQ). These items describe cultivating a positive and enjoyable atmosphere for followers. (See Appendix C).

Empirical overlap and nomological overlap. Past research has demonstrated empirical overlap between consideration and transformational leadership. Bass (1999) even acknowledged that his own empirical estimate of the observed correlation between LBDQ-consideration and MLQ-individualized consideration was very large (r = .69; Seltzer & Bass, 1990). More recently, Piccolo et al.'s (2012) meta-analysis found that the corrected correlation between consideration and overall transformational leadership was also quite high (ρ = .74).

Meta-analyses examining consideration (Judge et al., 2004) and transformational leadership (Judge & Piccolo, 2004) revealed similar nomological networks. Consideration and transformational leadership demonstrated moderate to strong corrected correlations respectively with follower job satisfaction (ρ = .46; ρ = .58), follower satisfaction with leader (ρ = .78; ρ = .71), follower motivation (ρ = .50; ρ = .53), leader job performance (ρ = .25; ρ = .27), group-organization performance (ρ = .28; ρ = .26), and leader effectiveness (ρ = .52; ρ = .64; Judge et al., 2004; Judge & Piccolo, 2004). Furthermore, consideration and transformational leadership respectively served as similar predictors of job satisfaction (β = .23; β = .28) and leader

effectiveness (β = .15; β =.20; Piccolo et al., 2012). Consideration and transformational leadership are also predicted by the same set of personality variables. In particular, both leadership styles are positively related to extraversion, conscientiousness, agreeableness, and honesty-humility (de Vries, 2008). Moreover, analyzing personality using the interpersonal circumplex revealed that both considerate leaders and transformational leaders display positive interpersonal characteristics such as warmth and agreeableness (de Vries, 2008).

Contingent Reward and Transformational Leadership

Concept definition. Although frequently contrasted with each other, contingent reward and transformational leadership are complementary leadership styles (Lowe, Kroeck, & Sivasubramaniam, 1996). The behaviors of contingent reward and transformational leadership are not mutually exclusive. In fact, transformational leaders are theorized to participate in the exchange process with subordinates as done by transactional leaders, but additionally do more in order to satisfy higher-order needs (Bass, 1985).

Item content. There does not seem to be much overlap in item content between contingent reward and transformational leadership, as measured by the MLQ and TLI. Specifically, contingent reward is based on recognizing and rewarding good performance, along with conveying clear expectations for performance. On the other hand, transformational leadership involves serving as a role model, inspiring followers by articulating an appealing vision, challenging old ideas, and attending to individual followers' needs.

Empirical overlap and nomological overlap. Research has demonstrated empirical similarity between contingent reward and transformational styles of leadership. Meta-analytic evidence has found that contingent reward and transformational leadership are strongly correlated (ρ = .80; Judge & Piccolo, 2004). In two more recent primary studies, Piccolo et al.

(2012) also found that contingent reward and transformational leadership were strongly correlated r = .81 (N = 355) and r = .84 (N = 1269).

Moreover, Judge and Piccolo (2004) meta-analytically showed that transformational leadership and contingent reward had similar predictive validities with a variety of work criteria, respectively, including follower job satisfaction (ρ = .58; ρ = .64), follower satisfaction with leader (ρ = .71; ρ = .55), follower motivation (ρ = .53; ρ = .59), leader job performance (ρ = .27; ρ = .45), group-organization performance (ρ = .26; ρ = .16), and leader effectiveness (ρ = .64; ρ = .55; Judge & Piccolo, 2004). As such, contingent reward and transformational leadership strongly overlap with each other, in terms of their empirical relationship and their associations with external variables.

PROPOSED MEASUREMENT MODELS OF LEADERSHIP CONSTRUCTS

There appears to be construct redundancy among leader consideration, LMX, contingent reward, and transformational leadership. This redundancy can be seen to varying degrees when taking into account concept definition, item content, empirical overlap, and nomological overlap. It seems that leadership items across scales designed to measure different leadership concepts may actually be measuring leader consideration. Newman et al. (2016) recently proposed a higher-order *L factor* in follower perceptions of leaders, which is reflected by *LMX*, *transactional leadership, transformational leadership,* and *satisfaction with supervisor*. The L factor model conceptualizes leadership behavior as emerging from a broad, higher-order construct, also labeled *leader individualized consideration*. In the current work, I will modify and test the L factor model by adding a direct measure of *consideration* (as originally defined by the LBDQ and the Ohio State studies). I will also remove the *satisfaction with supervisor* lower-order construct from Newman et al.'s conceptualization of the L factor, because liking of one's

leader has already been incorporated into the LMX construct (Liden & Maslyn, 1998). The L factor can be defined as the, "perception that the leader provides beneficial and/or benevolent treatment (support, inspiration, and due rewards) to the employee," (Newman et al., 2016). It seems likely that a higher-order factor could be driving specific factors of supportive leader behavior. There may be a set of core beliefs or attitudes that influence how a leader perceives the workplace and consequently behaves toward followers. Even more fundamentally, there might emerge a positive manifold in how followers variously perceive their leaders' supportiveness, inspiring-ness, provision of deserved rewards, etc.; and this positive manifold could stem from the tendency for leaders who provide one sort of relationship-oriented behavior to also provide other such behaviors (a general syndrome of leadership style). Beyond the L factor model, I also propose five alternative models that integrate the four dimensions: leader consideration, LMX, contingent reward, and transformational leadership. These alternative models are illustrated in Figure 2.

Model 1: Oblique Four-Factor Model

In the oblique four-factor model, items load onto specific factors of leadership (i.e., consideration, LMX, contingent reward, and transformational leadership), and the factors are free to correlate. If factor loadings are strong but factor correlations are substantially less than unity (Fornell & Larcker, 1981), then different items can be viewed as measuring distinct leadership dimensions. However, strong loadings and strong factor correlations would indicate that items exhibit convergent validity in their measurement of each intended construct definition, but that different constructs relate to another. In other words, leadership can be portrayed as a group-factor model.

Model 2: Hierarchical Model

In the hierarchical model, items load onto four first-order factors (i.e., consideration, LMX, contingent reward, and transformational leadership) which in turn load onto a higher-order general factor of leadership (i.e., the L factor). If items measure their intended constructs, then the factor loadings onto the first-order factors should be large. If the leadership styles reflect a broader leadership construct, then the loadings of first-order factors onto the general L factor will also be robust.

Model 3: Bifactor Model

In the bifactor model (Gignac, 2016; Holzinger & Swineford, 1937; Schmid & Leiman, 1957; Yung, McLeod, & Thissen, 1999), each item will double-load: once onto a general factor (i.e., L factor), and once onto one of four specific group factors (i.e., consideration, LMX, contingent reward, or transformational leadership). If the leadership dimensions are not clearly distinguishable, then a single construct may be more representative of leadership. In this case, loadings onto the general factor will be stronger than loadings onto the specific leadership factors. On the other hand, if items load more strongly onto specific factors than onto the general factor, then consideration, LMX, contingent reward, and transformational leadership may be appropriately conceptualized using separate dimensions. The bifactor model also helps reveal which specific factors load most strongly onto the general factor of leadership, and thus could serve as a marker variable for the L factor.

Model 4: Unidimensional Model

In the unidimensional model, all leadership items across scales load onto a single underlying factor. If items from the consideration, LMX, contingent reward, and transformational leadership scales actually measure a single leadership construct, then the loadings onto the single factor should be robust.

Present Study

I propose two studies to investigate the extent to which leadership items belonging to different instruments represent a general factor of leadership. Study 1 is a construct-level meta-analysis that also estimates the correlations among lower-order leadership constructs (consideration, LMX, contingent reward, and transformational leadership), and then tests the incremental validity of each lower-order leadership construct over the higher-order L factor in predicting work criteria. Study 2 is a primary data collection that attempts to replicate some of the findings from Study 1.

CHAPTER 2 METHOD

STUDY 1: META-ANALYSIS

Original Meta-Analyses

For missing values in the meta-analytic correlation matrix, I conducted three original meta-analyses. In particular, I estimated the meta-analytic correlations between LMX and conscientiousness, emotional stability, and openness. I combined these new meta-analytic estimates with estimates from published meta-analyses in order to construct a meta-analytic correlation matrix.

Literature Search

I conducted a literature search using several different databases, including PsycINFO, ProQuest Digital Dissertations, ABI/Inform, Web of Science, and Google Scholar in order to collect primary studies that measured leadership. I also searched through conference proceedings from the Society of Industrial Organizational Psychology and Academy of Management for the last 19 years (1998-2016). Search terms included *charismatic leadership, consideration, contingent reward, idealized influence, individualized consideration, inspirational motivation, intellectual stimulation, leader-member exchange, transactional leadership, transformational leadership, LBDQ, LMX,* and *MLQ.*

Inclusion Criteria

In order to be included in the meta-analysis, a study had to meet several criteria. First, a study must measure at least one leadership construct (consideration, LMX, contingent reward, or transformational leadership). Second, a study must measure the relationship between two leadership constructs, or between a leadership construct and one of the following correlates: Big Five personality traits, job performance, OCB, job satisfaction, and affective commitment. These

correlates were chosen because they have been connected to the four leadership constructs in past meta-analyses. Third, a study must report enough information to calculate a correlation between leadership and the correlate, or between two leadership constructs. If a study reported multiple effect sizes across different measures of the same construct (e.g., across facet measures of job satisfaction), I calculated composite correlations (Ghiselli, Campbell & Zedeck, 1981). If the same sample or overlapping samples are used in multiple published studies, I selected the study with the larger sample size reported.

Coding

For each sample, I coded (a) correlations between leadership and the specified correlates, or correlations between different leadership constructs, (b) sample size, and (c) reliabilities.

Meta-Analytic Procedures

I used Schmidt and Hunter's (2015; Hunter and Schmidt, 2004) random effects meta-analytic procedures to estimate the mean correlations between leadership and correlates. I corrected for unreliability in the predictor and the criterion. Local reliability estimates from primary studies were used whenever possible. For studies that did not report reliability, I will imputed the average of available reliability estimates for the missing reliabilities.

Meta-Analytic SEM

First, I built a correlation matrix containing meta-analytic estimates (as recommended by Viswesvaran & Ones, 1995) of leadership constructs (i.e., consideration, LMX, contingent reward, and transformational leadership), along with: (a) several criterion variables (i.e., job satisfaction, affective organizational commitment, job performance, OCB), and (b) correlates (i.e., follower Big Five personality traits). The meta-analytic correlation matrix was based upon 88 published meta-analytic correlations, and three original meta-analytic correlations (i.e., LMX

with conscientiousness, emotional stability, and openness). Additionally, I updated DeRue et al.'s (2011) meta-analytic correlation between consideration and contingent reward by including two primary studies from Piccolo et al. (2012).

Second, I conducted confirmatory factor analysis (CFA) with the four leadership constructs (i.e., consideration, LMX, contingent reward, and transformational leadership) as indicators of the latent construct, the L factor. Using the lavaan package in R, I conducted regression analyses to determine the criterion validity of the L factor. Each criterion variable was modeled as a latent variable reflected by a single indicator with factor loadings fixed to 1 and uniqueness fixed to zero (i.e., the meta-analytic input correlation matrix is already corrected for unreliability, so the random error need not be modeled via SEM).

Third, I examined the specific validity of each leadership construct over other leadership constructs in predicting criterion variables. These analyses were designed to answer the question of which lower-order leadership construct (e.g., LMX, transformational leadership) has the greatest predictive power. Classically, similar questions have been asked with regard to the specific validity of lower-order cognitive abilities (Hunter, 1983; Ree & Earles, 1991; Ree, Earles & Teachout, 1994; Schneider & Newman, 2015; Schulte, Ree & Carretta, 2004; Wee, Newman, & Joseph, 2014), and the specific validity of lower-order traits from the core self-evaluations domain (Erez & Judge, 2001; Judge et al., 1998).

In particular, Judge and colleagues (Erez & Judge, 2001; Judge, Erez, Bono & Thoresen, 2003) outlined procedures (based on Ree et al., 1994) to assess the incremental validity of a higher-order factor core self-evaluations (CSE) over its constituent factors (self-esteem, self-efficacy, locus of control, and neuroticism). From principal components analysis results (see Erez & Judge, 2001; Judge et al., 1998), the first component represented CSE and the remaining

unrotated principal components as a set represented the specific factors. Next, two sets of regression analyses were conducted in order to predict criterion variables. In one set of regressions, the CSE factor/component was entered first and then the set of all specific factors was entered next (assessing incremental validity of the lower-order factors together, controlling for the higher-order factor). A significant change in R^2 suggests that the set of specific factors together added incremental variance beyond the variance explained by the higher-order factor. Erez and Judge (2001) reported not-statistically-significant changes in R^2 from including the set of lower-order factors.

In a second paper, Judge et al. (2003) developed a new measure, Core Self-Evaluations Scale (CSES), to measure the CSE factor, and examined the amount of information lost by using this new measure rather than by measuring the four lower-order factors. Two sets of regression analyses were conducted to predict work criteria in multiple samples (for a total of seven regression equations in each set of analyses). The four lower-order factors were entered together first, and the CSES measure (which was a separate measure, and was not composed on the four lower-order trait measures in this study) was added second. Then, the reverse was conducted such that CSES was entered first, followed by the four lower-order factors in one block. In both sets of Judge et al.'s (2003) regression analyses, the second step explained a statistically significant amount of variance in four out of the seven equations. The authors interpreted these results to suggest that the new CSES measure demonstrated as much predictive utility as the four lower-order factors.

Instead of following the procedures by Judge and colleagues as described above, I assessed the specific validities of leadership constructs using a different method. Rather than relying on factor scores and/or principal components analysis, I implemented a two-step

approach to assess specific validity. First, I estimated parameters in a structural equation model in which the L factor was indicated by the four specific lower-order leadership constructs (i.e., consideration, LMX, contingent reward, and transformational leadership; see Figure 3). Second, I estimated a model in which the L factor predicted the criterion variables (e.g., job satisfaction; Figure 4). Third, I also estimated versions of Figure 4 in which only one criterion variable was predicted at a time (e.g., Figure 5, but without the dotted line arrow). Fourth, I fixed the factor loadings of the lower-order leadership constructs onto the L factor, to the parameter values from the CFA results in the first step (Figure 3). Fixing the factor loadings hold the operational definition of the L factor constant across models. I then estimated a model in which added a direct path from each leadership construct to the criterion variable (see Figure 5), which enabled me to calculate the change in R^2 from using lower-order leadership factors to predict each criterion, above and beyond the L factor. This procedure was repeated separately for each criterion variable (i.e., job performance, OCB, job satisfaction, and affective commitment).

Fourth, I examined the effect of followers' personality traits on first-order leadership constructs, after controlling for the L factor. Each predictor and criterion variable was modeled as a latent variable reflected by a single indicator with factor loadings fixed to 1 and uniqueness fixed to zero. First, I estimated parameters in a structural equation model in which the L factor, indicated by the four specific leadership constructs (i.e., consideration, LMX, contingent reward, and transformational leadership), was predicted by Big Five personality traits (i.e., emotional stability, agreeableness, conscientiousness, extraversion, and openness). Second, I fixed the factor loadings of the lower-order leadership constructs onto the L factor, to the parameter values from the CFA results in the previous step (fixing the factor loadings prevents the operational definition of the L factor from changing, from one model to the next). I then added a direct path

from each personality trait to a lower-order leadership construct, with each personality trait predicting the L factor and each of the specific factors, one at a time (Figure 7). This procedure was repeated separately for each predictor variable (i.e., emotional stability, agreeableness, conscientiousness, extraversion, and openness).

I examined the change in R^2 (in SEM terminology, 1 minus ψ, where ψ is the standardized variance of the disturbance term), to determine the effect of each personality trait in predicting each lower-order leadership factor after controlling for the L factor. Specifically, I calculated two types of variance explained (R^2). First, I calculated the variance explained in each first-order leadership factor, from a model in which the L factor alone was predicted by a personality trait (i.e., Figure 7, but without the dotted line arrow). Second, I calculated the variance explained in each lower-order leadership factor when each lower-order leadership factor was predicted by both the L factor and the personality trait directly (Figure 7). Then I calculated the change in R^2 between the two models, to estimate how much incremental variance was explained in each lower-order leadership factor by each personality trait, after controlling for the L factor.

STUDY 2: PRIMARY DATA COLLECTION

Participants

I recruited 1,000 participants online using Amazon's TurkPrime website. Participants must be at least 18 years of age and full-time employees (i.e., working at least 30 hours per week). Because this study is examining leadership behaviors, participants had to have a direct supervisor or manager at work. To screen out participants who were not paying adequate attention to the survey items, I used 5 quality control items that each directed the participant to select a particular response option (e.g., "Choose 'Somewhat agree' for this item.") After

removing the 59 participants who failed one or more quality control items, data from 941 participants were retained and used for analyses.

Procedure

Potential participants viewed a posting of the study on TurkPrime. The wording of the study announcement was, "complete a survey about work behaviors and attitudes." Individuals who clicked on this link saw additional instructions, and those who wished to participate were able to enter the study and provide consent. Participants completed a self-report survey. Survey questions included demographic variables, personality traits, leadership, work behaviors, and work attitudes. All participants received monetary compensation of $2.00. Participation was voluntary and responses were anonymous.

Measures

Leadership. Participants completed five leadership measures. Consideration was measured by the Leader Behavior Description Questionnaire (LBDQ-Form XII; Stogdill, 1963), which consists of 10 items rated on a Likert scale from 1 (never), 2 (sometimes), 3 (about half the time), 4 (most of the time), or 5 (always). Example items are, "Is friendly and approachable" and "Does little things to make it pleasant to be a member of the group" (Cronbach's alpha = .91)

Leader-member exchange was be measured by the LMX-7 (Scandura & Graen, 1995) which contains seven items rated on a five-point scale (Cronbach's alpha = .93). Example items are, "Do you know where you stand with your leader…do you usually know how satisfied your leader is with what you do? (1 = rarely, 2 = occasionally, 3 = sometimes, 4 = fairly often, 5 = very often)" and "How well does your leader understand your job problems and needs? (1 = not a bit, 2 = a little, 3 = a fair amount, 4 = quite a bit, 5 = a great deal)." LMX was additionally

measured by the Liden and Maslyn's (1998) multidimensional measure (LMX-MDM) which consists of four dimensions (i.e., affect, loyalty, contribution, and respect), each measured by three items, for a total of 12 items on a five-point agreement scale (Cronbach's alpha = .95). Example items are, "I like my supervisor very much as a person (affect)," "My supervisor would come to my defense if I were "attacked" by others (loyalty), "I am willing to apply extra efforts, beyond those normally required to meet my supervisor's work goals (contribution)," and "I respect my supervisor's knowledge of and competence on the job (respect)." Contingent reward was measured by four items (Cronbach's alpha = .85) rated on a five-point frequency scale (1 = not at all, 2 = once in a while, 3 = sometimes, 4 = fairly often, 5 = frequently, if not always) from the Multifactor Leadership Questionnaire (MLQ-Form 5X; Bass & Avolio, 1995). Also from the MLQ-5X, transformational leadership was measured by five dimensions (i.e., idealized influence attributes, idealized influence behaviors, inspirational motivation, intellectual stimulation, and individualized consideration) with four items each for a total of 20 items (Cronbach's alpha = .97). The Transformational Leadership Inventory (TLI; Podsakoff et al., 1990) was also used to measure contingent reward (five items; Cronbach's alpha = .93) and transformational leadership (23 items; Cronbach's alpha = .96) on a five-point agreement scale. An example item measuring contingent reward is, "Always gives me positive feedback when I perform well." An example item measuring transformational leadership is, "Inspires others with his/her plans for the future."

Criterion variables. Participants also responded to measures about several work behaviors and attitudes. Task performance was measured by Williams and Anderson's (1991) 7-item scale, from 1 (strongly disagree) to 5 (strongly agree). An example item is, "Adequately complete assigned duties" (Cronbach's alpha = .87).

Organizational citizenship behavior (OCB) was measured with 14 items from Williams and Anderson (1991), from 1 (strongly disagree) to 5 (strongly agree). An example item is, "Help others who have heavy work loads" (Cronbach's alpha = .80).

Counterproductive work behaviors (CWB) was measured by Bennett and Robinson's (2000) 19-item scale, from 1 (never) to 5 (always). An example item is, "Acted rudely toward someone at work" (Cronbach's alpha = .93).

Work withdrawal was measured by eight items from Hanisch and Hulin's (1990) withdrawal scale (see Carpenter, Newman & Arthur, in progress) on a five-point frequency scale (1 = never, 2 = once or twice, 3 = monthly – once or twice per month, 4 = weekly – once or twice per week, 5 = everyday). An example item is, "Am absent from work when I am supposed to be there" (Cronbach's alpha = .85).

Job satisfaction was measured using eight items from Brayfield and Rothe's (1951) scale (see Jeon & Newman, 2016), from 1 (strongly agree) to 5 (strongly disagree). An example item is, "I feel real enjoyment in my work" (Cronbach's alpha = .94).

Affective commitment was measured using Allen and Meyer's (1990) 8-item scale, rated from 1 (strongly disagree) to 5 (strongly agree). An example item is, "I would be very happy to spend the rest of my career with this organization" (Cronbach's alpha = .91).

Turnover intentions were measured by three items adapted from Mitchell, Holtom, Lee, Sablynski, and Erez (2001), from 1 (strongly disagree) to 5 (strongly agree). The items are, "I intend to leave the organization in the next 12 months, "I feel strongly about leaving the organization within the next 12 months," and "It is likely that I will leave the organization in the next 12 months" (Cronbach's alpha = .97).

Follower Personality. Personality traits of followers were measured using the Big Five Inventory (John, Naumann, & Soto, 2008). This measures the Big Five personality traits (i.e., extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience) and contains 44 items. Items are rated from 1 (strongly disagree) to 5 (strongly agree). An example item measuring extraversion is, "Is talkative" (Cronbach's alpha = .89). An example item measuring agreeableness is, "Is helpful and unselfish with others" (Cronbach's alpha = .85). An example item measuring conscientiousness is, "Does a thorough job" (Cronbach's alpha = .70). An example item measuring neuroticism is, "Is depressed, blue" (Cronbach's alpha = .91). An example item measuring openness is, "Has an active imagination" (Cronbach's alpha = .85).

Method factors. Social desirability was measured with the 13-item version of Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960; Reynolds, 1982), rated from 1 (strongly disagree) to 5 (strongly agree). An example item is, "It is sometimes hard for me to go on with my work if I am not encouraged" (Cronbach's alpha = .86). Positive affectivity and negative affectivity were measured using 10 items each from the PANAS (Watson, Clark & Tellegen, 1988) on a five-point scale (1 = very slightly, not at all, 2 = a little, 3 = moderately, 4 = quite a bit, 5 = extremely). An example item measuring positive affect is, "Excited" (Cronbach's alpha = .92). An example item measuring negative affect is, "Upset" (Cronbach's alpha = .93).

Analyses

In an attempt to replicate construct-level findings from Study 1 (meta-analytic correlations), I conducted similar analyses on Study 2 data. However, with the Study 2 data I had the advantage of access to item-level information. In order to compare the different measurement models specified below, I constructed an 81 x 81 correlation matrix of the items from the

leadership scales (N = 941). I used the lavaan package in R to estimate these confirmatory factor-analytic models.

Specifying Measurement Models

First-Order Leadership Factors (Consideration, LMX, Transformational Leadership, and Contingent Reward). I tested several *a priori* item-level measurement models (i.e., Models 1-4; see Figure 2). In order to estimate Models 1, 2, and 3, and had to specify factor models for the first-order leadership constructs (i.e., consideration, LMX, transformational leadership, and contingent reward). I constructed these models so as to account for the multidimensionality of the leadership measures – specifically, the multidimensionality of the popular measures of LMX (i.e., the LMX-MDM) and transformational leadership (i.e., the MLQ and TLI). For the LMX-MDM, I created four factors to reflect the four dimensions of the LMX-MDM: affect, contribution, loyalty, and respect. Each of these four factors was indicated by three items (using the exact same specification as Liden & Maslyn, 1998). Further, the seven items from the LMX-7 were modeled at the same level of abstraction as the four LMX-MDM factors [i.e., the LMX factor in Models 1, 2, and 3 (Figure 2) had 11 direct indicators—including the seven LMX-7 items plus the four LMX-MDM factors].

For transformational leadership, I modeled the multidimensionality of the MLQ and the TLI by creating 10 higher-order factors: four MLQ dimensions (i.e., idealized influence [attributes and behaviors], inspirational motivation, intellectual stimulation, and individualized consideration; Bass & Avolio, 1995) and six TLI dimensions (i.e., articulating a vision, providing an appropriate model, fostering acceptance of group goals, high performance expectations, individualized support, and intellectual stimulation; Podsakoff et al., 1990). As

such, the TFL factor in Models 1, 2, and 3 (Figure 2) had 10 direct indicators—including the four MLQ factors plus the six TLI factors.

For the consideration factor in Models 1, 2, and 3 (Figure 2), I specified 10 direct indicators—the 10 LBDQ-XII items. For the contingent reward factor in Models 1, 2, and 3 (Figure 2), I specified 9 direct indicators—include 4 contingent reward items from the MLQ and 5 contingent reward items from the TLI. I will next describe Models 1 through 4 (Figure 2).

Measurement Models 1 through 4. The first-order leadership factors are modeled as described above, and these first-order leadership factors are incorporated into the hypothesized models for the current paper (see Models 1, 2, and 3; Figure 2). The *oblique* model (Model 1; Figure 2) consisted of four first-order leadership factors (i.e., consideration, LMX, contingent reward, and transformational leadership) which were allowed to correlate. There were several indicators for each factor: (a) for consideration: 10 consideration items from the LBDQ-XII, (b) for LMX: seven LMX-7 items plus four LMX-MDM dimensions, (c) for contingent reward: 4 MLQ items plus 5 TLI items, and (d) for transformational leadership: four MLQ-transformational dimensions plus six TLI-transformational dimensions. The *hierarchical* model (Model 2) was identical to Model 1, except that the four leadership factors (i.e., consideration, LMX, contingent reward, and transformational leadership) were not allowed to directly correlate, but rather their interrelationships were modeled via a higher-order L factor (Figure 2). In the *bifactor* model (Model 3), we specified a measurement model that was identical to Model 1, expect that the first-order leadership factors were not allowed to correlate, and all of the items were allowed to directly load onto an L factor (Figure 2). Finally, in the *unidimensional* model (Model 4), all leadership items loaded directly onto the general factor.

Common Method Bias Measurement Model. When estimating the effects of a general factor (i.e., the L factor) on leadership measures, one important potential confound is that the general factor might include variance due to common method (Johnson, Rosen, & Djurdjevic, 2011; see Campbell & Fiske, 1959; Podsakoff et al., 2003). As such, I will also estimate the key L-factor models (Models 2 and 3) while attempting to control for several well-known sources of potential common method variance. Common method variance refers to the, "variance that is attributable to the measurement method rather than to the constructs the measures represent" (Podsakoff et al., 2003, p. 879; see Campbell & Fiske, 1959). Method biases contribute to systematic measurement error, and the observed relationships between variables can potentially be explained by these biasing factors rather than by hypothesized relationships. The *multiple-method factor* approach directly measures suspected sources of method bias, and "models these biasing factors as latent variables with multiple indicators, and estimates their effects on the measures of the constructs of interest" (Podsakoff et al., 2003, p. 897). Following Podsakoff et al.'s (2003) suggestions, I will control for three specific sources of potential method bias—social desirability, positive affectivity, and negative affectivity (see Model 4B, p. 896). Social desirability is characterized as, "the need for social approval and acceptance and the belief that it can be attained by means of culturally acceptable and appropriate behaviors" (Crowne & Marlowe, 1964, p. 109). Individuals affected by social desirability bias are motivated to present themselves in a favorable light which may result in inflated scores on positive attributes. Furthermore, other dispositional traits, such as positive and negative affectivity, may distort ratings (Brief, Burke, George, Robinson & Webster, 1988; Williams & Anderson, 1994). Individuals with high positive affectivity have a favorable view of their world, and those high on negative affectivity have an unfavorable view of their world (Watson & Clark, 1984). Indeed,

Williams and Anderson's (1994) structural equation models demonstrated that positive affectivity influenced ratings of contingent reward.

The *common method bias model-hierarchical* (Model 2b) was identical to Model 2 (hierarchical model), but with the addition of three factors specified to represent directly-measured sources of common method variance (i.e., social desirability, positive affectivity, and negative affectivity; Bagozzi, 1984; Podsakoff, MacKenzie & Podsakoff, 2012). In Model 2b, each leadership item was specified to have an additional loading directly onto each of the three directly-measured common method factors (Podsakoff et al., 2012; Schaubroeck, Ganster & Fox 1992; Williams, Gavin & Williams, 1996). Next the *common method bias model-bifactor* (Model 3b) was identical to Model 3 (*bifactor* model), but with the addition of the three directly measured common method factors (social desirability, positive affectivity, and negative affectivity), and with each leadership item loading directly onto each directly measured common method factor. Models 2b and 3b are both depicted in Figure 2.

Partitioning Variance in Leadership Items into L Factor vs. First-order Leadership Constructs.

After comparing various measurement models for the leadership items (Figure 2), I estimated the relative proportions of measurement variance that are attributable to each leadership construct versus the L factor. For instance, if 30% of the variance in consideration (LBDQ) items is attributable to the L factor, but only 10% of the variance in consideration (LBDQ) items is attributable to the Consideration group factor, this will help the reader to understand the centrality of the L factor in popular leadership measures.

The variance partitioning was conducted using results from the bifactor model (Models 3 and 3b). In particular, the squared standardized factor loading of a leadership item onto the L factor is an estimate of the % of variance accounted for in the item by the L factor; whereas the

squared standardized factor loading of a leadership item onto a first-order leadership group factor from the bifactor model is an estimate of the % of variance accounted for in the item by the first order leadership group factor. I calculated the % variance accounted for in leadership measures at several levels of item aggregation: (a) across all leadership items, (b) across all items measuring each lower-order factor (e.g., all LMX items), (c) for each leadership instrument (e.g., for the LMX-MDM), and (d) for each item.

Estimating Unique Relationships of L factor and Group Factors with External Variables

Specific Validities of Leadership Constructs. In order to test the incremental validity of first-order leadership constructs in predicting criterion variables beyond the L factor, I followed a similar procedure as described above in the third step of meta-analytic SEM in Study 1. That is, I estimated the relationship between each first-order leadership factor (*Consideration, LMX, Transformational Leadership, and Contingent Reward*) and each external criterion variable, while controlling for the L factor (see Figure 5). Results are presented in Table 11a.

Specifically, I calculated two types of variance. First, I calculated the variance in each criterion variable explained by the L factor. Second, I calculated the variance explained by the L factor plus each group factor, one at a time. These analyses allowed me to examine change in R^2 from using lower-order leadership factors, above and beyond the L factor. To restate, I calculated the change in R^2 from using the L factor to predict each criterion, versus using the L factor plus one lower-order leadership factor at a time (to predict the criterion).

Personality Predicting Leadership Constructs beyond L. I also tested the effect of followers' personality traits on first-order leadership constructs, after controlling for the L factor. I followed the same procedure as described above in the meta-analytic SEM in Study 1 (see Figure 6).

CHAPTER 3 RESULTS

STUDY 1: META-ANALYSIS

Meta-Analytic SEM. Meta-analytic correlations are presented in Table 10a, and include results from my four original meta-analyses, which are detailed in Table 10b. The harmonic mean sample size across input correlations was used when estimating the hypothesized structural equation models. The first model estimated was a *simple L-factor model*, in which each first-order leadership construct (consideration, LMX, contingent reward, and transformational leadership) was allowed to load onto the L factor. This model is displayed in Figure 3. The model exhibited the following fit indices: $\chi^2_{(df=2)}$ = 43.32, RMSEA = .211, SRMR = .024, CFI = .97; TLI = .91; AIC = 3,900; which I interpreted to suggest adequate fit (i.e., the RMSEA suggests poor fit, but the SRMR, CFI, and TLI all suggest good fit). With regard to parameter estimates from the simple L factor model, all of the standardized factor loadings were quite large (average λ = .84), confirming that on average, over 70% of the variance in first-order leadership factors (consideration, LMX, contingent reward, and transformational leadership) is explained by the L factor.

The second model estimated was the *L factor criterion model* (Figure 4), in which the L factor was specified to predict the four outcome variables (job performance, OCB, job satisfaction, and affective commitment). The indices of practical fit for this model ($\chi^2_{(df=14)}$ = 111.01, RMSEA = .148, SRMR = .035, CFI = .93; TLI = .86; AIC = 5,864) were mixed, with RMSEA and TLI indicating suboptimal fit, but with SRMR and CFI suggesting adequate fit. In terms of parameter estimates, the L factor robustly predicted each of the criterion variables: job performance (β = .27), OCB (β = .31), job satisfaction (β = .60), and affective commitment (β = .49).

The third set of models estimated were the *specific validity models*, in which I assessed the degree to which each lower-order leadership factor predicted each criterion variable, after controlling for the L factor (Figure 5). The specific validity models were used to prepare Table 11a. First, I estimated the validity of the L factor in predicting all four criterion variables simultaneously (Figure 4), including job performance (β = .27), OCB (β = .31), job satisfaction (β = .60), and affective commitment (β = .49). Then, I estimated a sequence of nested models for the purpose of calculating change in R^2 for each lower-order leadership factor, above and beyond the L factor. Models in which the L factor plus one lower-order leadership dimension predicted each criterion showed that the change in R^2 when each specific factor was added was quite small.

Results from these models appear in Table 11a. The average change in R^2 for including each lower-order leadership factor above and beyond the L factor were: job performance (average ΔR^2 = .012; averaged across the 4 leadership constructs), OCB (average ΔR^2 = .015), job satisfaction (average ΔR^2 = .011), and affective commitment (average ΔR^2 = .044). It is notable that for job performance, OCB, and job satisfaction, the average ΔR^2 estimates were close to zero. When the L factor was controlled for, adding one specific factor only resulted in a statistically significant specific validity estimate for one of 16 attempts. The only exception was for affective commitment, such that adding the lower-order transformational leadership factor as a predictor yielded a significant specific validity estimate (over and above the L factor). In other words, when it comes to explaining the criterion variables, the L factor carries all of the significant variance explained, for 15 out of 16 tests I conducted.

The fourth set of models estimated were the *personality predictor models* (Figure 6 and Figure 7) in which I assessed the degree to which followers' personality traits predicted lower-order leadership factors, after controlling for the L factor. Results are presented in Table 11b.

Results showed that extraversion (β=.21), agreeableness (β =.15), and conscientiousness (β =.09) statistically significantly predicted the L factor, and the change in R^2 when each of the Big Five personality traits was added (i.e., predicting each lower-order leadership factor, beyond the L factor) was quite small. The average changes in R^2 for emotional stability (ΔR^2 = .007), agreeableness (ΔR^2 = .004), conscientiousness (ΔR^2 = .023), extraversion (ΔR^2 = .014), and openness (ΔR^2 = .005) were close to zero. When the L factor was controlled for, adding each personality trait contributed almost nothing to the prediction of the lower-order leadership factors (i.e., relationship between personality and leadership constructs are almost completely explained by the L factor).

The only exceptions (i.e., the only personality-to-lower order leadership factor pairings that exhibited positive relationships, after controlling for the L factor) were when: (a) emotional stability predicted consideration and transformational leadership, (b) agreeableness predicted consideration, (c) conscientiousness predicted consideration, (d) extraversion predicted consideration, and (e) openness predicted transformational leadership. That is, consideration was uniquely predicted (beyond the L factor) by 4 out of 5 personality traits, and transformational leadership was uniquely predicted (beyond the L factor) by 2 out of 5 personality traits. As I discuss later, these trends can also be observed in the meta-analytic correlation matrix (Table 10a), where consideration correlates more strongly with the first four Big 5 traits than do the other lower-order leadership factors; and where transformational leadership correlates more strongly with emotional stability and openness than do the other lower-order leadership factors. It is notable that the personality-consideration correlations are based on smaller meta-analyses than are the other correlations in the meta-matrix, which should be taken into consideration when

interpreting the unique predictive effects beyond the L factor, and which will also be a finding we reassess in the Study 2 analyses of the primary data collection.

STUDY 2: PRIMARY DATA COLLECTION

Descriptive statistics of study variables are presented in Table 12.

Testing Measurement Models

I next estimated Models 1-5 (see Figure 2) using the primary data collected for Study 2. When estimating Model 3 (i.e., the bifactor model), the lavaan software returned two warning messages indicating it "could not compute standard errors" and "this may be a symptom that the model is not identified." When inspecting the output for Model 3, I noticed that the variance of the contingent reward group factor was reported as .000, and so I fixed this variance to .001 (which approximates zero, but allows the model to run). I was then able to inspect fit indices for all of the a priori models, on the basis of the item-level data from Study 2.

The goodness-of-fit indices for Models 1 through 4 are shown in Figure 8, and corresponding parameter estimates are presented in full in Tables 13a-f. Model 1 (Oblique 4-factor model) showed nearly adequate fit (RMSEA = .053; SRMR = .054; CFI = .89; TLI = .88), with very large latent factor correlations (ranging from .82 to .92) among the four specific leadership factors. These factor correlations were next modeled as a higher-order L factor, in Model 2 (Hierarchical model). Model 2 exhibited nearly adequate fit (RMSEA = .053; SRMR = .054; CFI = .89; TLI = .88), and the fit of Model 2 was virtually identical to the fit of Model 1. In Model 2, the four specific factors all had strong factor loadings onto the higher-order L factor (above .91), confirming that the four factors are indicators of a general leadership factor. The factor loadings from the Model 2 (Study 2) L factor model (Figure 8) were fairly consistent with

the factor loadings from the meta-analytic (Study 1) L factor model (Figure 3), with a tight range of factor loadings across models, varying from .83 to .96.

In Model 3 (Bifactor model, see Figure 8), the goodness of fit was even better than for Models 1 and 2 (Model 3: RMSEA = .046; SRMR = .035; CFI = .92; TLI = .91). This result is consistent with Gignac's (2016) demonstrations of superior fit of the bifactor model over hierarchical models, because the bifactor model does not constrain the ratio of the two loadings from each indicator to be constant across indicators. It is noteworthy that Model 3 exhibits the best fit of all four *a priori* models (Models 1 through 4, Figure 8), and the absolute fit of Model 3 can also be considered adequate by conventional standards.

When inspecting the parameter estimates of the best-fitting model (Model 3: Bifactor model), most leadership items/indicators loaded strongly onto the L factor, and weakly onto their intended specific leadership factors. For the L factor, the average factor loading was λ = .71 (only 3 items loaded below .40 onto the L factor: i.e., LMXMDM7 λ =.36; TLITFL15 λ=.27; TLITFL19 λ=.38). In contrast to the large L factor loadings, items/indicators tended to exhibit weaker loadings onto the specific group factors: consideration average loading λ = .28, LMX average loading λ =.40, contingent reward average loading λ = .26, and transformational leadership average loading λ = .37. Altogether, this suggests that more of the variance in leadership measures can be attributed to the L factor than to the lower-order leadership factors, as reviewed in the following section (see section on "partitioning variance in leadership items").

Finally, in Model 4 (unidimensional model), the fit indices were suboptimal (RMSEA = .077; SRMR = .053; CFI = .76; TLI = .76), suggesting that these items do not simply measure one dimension. Nonetheless, the vast majority of leadership items still exhibited strong loadings onto the L factor, with very few exceptions. Only three items had loadings less than .40 (i.e., the

same 3 items that loaded below .40 onto the L factor in Model 3). These lower-loading items included, "I do work for my supervisor that goes beyond what is specified in my job description," (LMX-MDM7), my leader "will not settle for second best" (TLI-TFL15) and "treats me without considering my personal feelings" (TLI-TFL19).

Partitioning Variance in Leadership Items into L Factor vs. First-order Leadership Constructs

Another way of looking at the implications of Model 3 (bifactor model, Figure 8) is to consider what portion of the variance in leadership items can be accounted for by the L factor versus being accounted for by the lower-order leadership factors. As can be seen in Figure 8, in a bifactor model, the L factor and the lower-order group factors are orthogonal. As such, one can easily determine the portion of variance in an item accounted for by each orthogonal factor, simply by squaring the respective standardized factor loadings.

To restate, the variance in leadership items can be partitioned into 3 components: (a) variance due to the leadership group factor that the item was designed to measure (i.e., consideration, LMX, contingent reward, or transformational leadership), (b) variance due to the L factor, and (c) unique variance, not shared with any common factor. When using a standardized metric, these three variance components will sum to 1.0 (or 100%). In addition to estimating these variance components, it is also illuminating to calculate the % of common factor variance that is due to the L factor. That is, noting that common factor variance equal 1 minus item unique variance, then:

$$\%\ common\ factor\ variance\ due\ to\ L\ factor = \frac{\%\ var\ in\ item\ due\ to\ L\ factor}{(\%\ var\ in\ item\ due\ to\ L\ factor + \%\ var\ in\ item\ due\ to\ Group\ factor)}.$$

For example, if the % common factor variance due to the L factor were 60%, that would mean that 60% of the common factor variance in a leadership item is due to the L factor, and the

remaining 40% of the common factor variance in the leadership item is due to the group factor (e.g., consideration, LMX, etc.).

The partitioning of variance for Model 3 is reported in Table 14. For the bifactor model (Model 3), the amount of variance in leadership items that is explained by the L factor is greater than the amount of variance in leadership items that is explained by the leadership group factors (i.e., consideration, LMX, contingent reward, and transformational leadership). Specifically, for Model 3, the average amount of variance in leadership items that is explained by the L factor ranges from 44% to 57%, whereas the amount of variance in items explained by the leadership group factors (i.e., consideration, LMX, etc.) ranges from 8% to 23%. Indeed, the leadership items seem to overwhelmingly reflect the L factor.

When looking at the % common factor variance due to the L factor (also in Table 14), we again see that the % of common factor variance in leadership items that is explained by the L factor is very high (ranging from 70% to 84%). In short, leadership items appear to largely reflect L factor variance (3 to 5 times as much as they reflect leadership group factor variance). As seen in Table 14, the leadership measures that seem most loaded with L factor variance are consideration (LBDQ-XI), LMX-7, Contingent Reward, and MLQ-transformational.

Common Method Variance (CMV) Models

In order to evaluate the extent to which parameter estimates and conclusions from my a priori L-factor models can be alternatively explained by common method bias, I next estimated Model 2b (Common method variance-hierarchical model; see Figure 8). The fit indices for Model 2b were suboptimal (RMSEA = .046; SRMR = .076; CFI = .87; TLI = .86), but the parameter estimates (see Table 13b) confirmed that both L factor loadings and lower-order loadings were very similar in magnitude to the corresponding loadings estimated without

statistical control for CMV. Also, the factor loadings of the item/indicators onto the CMV factor were: (a) social desirability (average λ = .10; smallest λ = .01; largest λ = .21), (b) positive affectivity (average λ = .20; smallest λ = .01; largest λ = .36), and (c) negative affectivity (average λ = -.07; smallest λ = .00; largest λ = .23).

I next estimated Model 3b (Common method variance-bifactor model; see Figure 8). The fit indices for Model 3b were nearly adequate (RMSEA = .042; SRMR = .070; CFI = .89; TLI = .88), and the parameter estimates (see Table 13c) again confirmed that both L factor loadings and lower-order leadership group factor loadings were very similar in magnitude to the corresponding loadings estimated without statistical control for CMV. Also, the factor loadings of the item/indicators onto the CMV factor were: (a) social desirability (average λ = .10; smallest λ = .01; largest λ = .21), (b) positive affectivity (average λ = .20; smallest λ = .00; largest λ = .34), and (c) negative affectivity (average λ = -.07; smallest λ = .00; largest λ = .23).

In short, using statistical control for directly measured sources of common method bias (Bagozzi, 1984; Williams et al., 1996?; Podsakoff et al., 2012) supports the conclusion that the results of model fit tests (including the existence and magnitude of the L factor, and the superior fit of the bifactor model) are not due to common method bias.

Criterion Validity of L Factor

In an attempt to replicate and extend the results from Study 1, I next tested the criterion validity of the L factor, building from Model 2 (hierarchical model). Using SEM, I tested a separate model for each of the seven criterion variables, estimating the path from the L factor to each criterion variable. Results are presented in Table 15. As expected, the parameter estimates leading to task performance, OCB, job satisfaction, and affective commitment were moderately to strongly positive. The parameter estimates leading to CWB, withdrawal, and turnover

intentions were moderate and negative. I note that the estimates predicting job satisfaction and affective commitment were particularly large (both estimates were .67). Job satisfaction and affective commitment are both evaluations of the work context, and out of all the other criterion variables, may be the most theoretically similar to perceptions of one's leader's behaviors.

Specific Validity of Leadership Constructs

I next tested the specific validities of leadership constructs beyond the L factor by building off Model 3 (bifactor model), and estimating a separate model for each of the seven criterion variables (see Figure 9). I calculated the change in R^2 for specific factors predicting each criterion above and beyond the L factor. Table 16 contains the results. For each criterion variable, the average change in R^2 across specific leadership factors (beyond the L factor) never exceeded 1%. Also, specific validity never exceeded 2%.

Personality Predictors

First, I examined the effect of followers' personality traits on the L factor as indicated by consideration, LMX, contingent reward, and transformational leadership (see Figure 10). Results revealed that agreeableness (β = .237), extraversion (β = .119), and openness (β = .086) were statistically significant predictors of the L factor. Emotional stability (β = .069), and conscientiousness (β = .046) did not significantly predict the L factor.

Second, I assessed the degree to which followers' personality predicted follower perceptions of lower-order leadership factors, after controlling for the L factor. Results are presented in Table 17. Results showed that the change in R^2 when each specific leadership factor was added was quite small. The average change in R^2 for emotional stability (ΔR^2 = .000), agreeableness (ΔR^2 = .007), conscientiousness (ΔR^2 = .003), extraversion (ΔR^2 = .004), and openness (ΔR^2 = .003) were all close to zero. When the L factor was controlled for, adding one

personality trait never accounted for more than 1% incremental variance in the lower-order leadership factors. In other words, when leadership is treated as the dependent variable, personality predicts the L factor, but does not uniquely predict the specific leadership factors to any notable degree after the L factor is controlled.

CHAPTER 4: DISCUSSION

Summary

Many leadership constructs in contemporary research have been based on different theories of leader behavior, and as a result, are measured with different inventories. Leader consideration as defined by Ohio State researchers describes leader behaviors that "regard the comfort, well-being, status, and contributions of followers" (Stogdill, 1963, p.4). Subsequent leadership dimensions (i.e., LMX, contingent reward, and transformational leadership) claim to be unique from leader consideration. In two empirical studies—a meta-analysis and a primary data collection—I demonstrated that these popular leadership constructs demonstrate substantial overlap with leader consideration. This redundancy with consideration is evident in several ways, including concept definition, item content, empirical overlap, and nomological overlap. The results of this dissertation suggest that a general leadership factor (i.e., L factor) exists and is indicated by consideration, LMX, contingent reward, and transformational leadership. The L factor has strong criterion validity when predicting several work behaviors and attitudes (e.g., job performance, job satisfaction), and carries most of the explanatory power of the lower-order leadership constructs (i.e., adding specific leadership factors does not provide much incremental validity beyond the L factor). Similarly, follower personality predicts the L factor, but does not notably predict specific leadership factors after the L factor is controlled. Furthermore, common method variance (i.e., social desirability, positive affectivity, and negative affectivity) does not seem to account for these conclusions with regard to the dominance of the L factor.

Implications for Theory and Practice

The results of this dissertation have important implications for leadership theory. For decades, scholars have been inventing new theories that purportedly describe unique concepts,

leading to construct proliferation. In reality, popular leadership constructs such as LMX, contingent reward, and transformational leadership, are empirically and conceptually redundant with the classic concept of leader consideration. Upon closer examination, these leadership constructs are quite similar to consideration in four ways. First, the very definitions themselves contain several overlapping elements. Second, a preliminary inspection of item content suggests that many of the items in these popular leadership inventories are similar. Third, existing meta-analyses have demonstrated strong correlations between consideration and each of the lower-order leadership dimensions. Fourth, these leadership constructs have similar relationships with correlates. Taken together, it appears that most leadership behavior can be characterized as reflecting a single higher-order factor.

Therefore, I assert that the L factor in leader behavior should not be ignored, and the hierarchical structure of leader behavior should be acknowledged. The L factor may be analogous to *g* in representing a general intelligence factor (Spearman, 1904). There is widespread consensus that intelligence is best conceptualized as having a hierarchical structure in which *g* is indicated by multiple specific factors of intelligence (e.g., fluid intelligence, crystallized intelligence, memory, etc.; Carroll, 1993; McGrew, 2009), and second-stratum/more specific intelligences should be discussed in light of *g* (Schneider & Newman, 2015; Wee, Newman, & Joseph, 2014). Similarly in the leadership domain, it seems to be the case where the *L* factor is reflected by specific leadership factors (i.e., consideration, LMX, contingent reward, and transformational leadership). This dissertation's findings suggest that after the L factor is controlled for, including specific leadership factors generally does not provide much more unique information in the prediction of the particular outcome variables considered here, and based primarily on single-source data. Thus, developing additional leadership theories and

inventories without considering their overlap with the L factor may constitute a reinvention of the wheel. The ostensible practice of relabeling leadership dimensions and mixing elements of dimensions has generated confusion in the field of leadership research, and likely hindered scientific progress (Newman et al., 2016; Shaffer et al., 2016). Instead, scholars interested in studying leadership should begin thinking of ways to integrate existing theories in order to further our understanding of follower-perceptions of leader behavior.

In fact, popular leadership theories and scales may be problematic and should be reevaluated. As a key example, Van Knippenberg and Sitkin (2013) call into question the concept and measurement of charismatic-transformational leadership (Bass, 1985; Conger & Kanungo, 1987), articulating their primary concern is that the concept definition is ambiguous. For instance, charismatic-transformational leadership has commonly been defined by its effects, namely leader effectiveness. This implies that only leader behaviors which yield effective outcomes can be characterized as charismatic-transformational. Van Knippenberg and Sitkin assert, "it is a logical flaw to define a concept in terms of its effects," (2013, p. 11) which makes the construct definition circular and prevents charismatic-transformational leadership from being studied with its effects. As such, the outcomes of leadership should ideally be removed from the definition of the leader behavior construct itself, as well as its measures.

Another potential contribution of the current paper to theory on leader behavior involves the specification of aspects of the nomological network of the L factor. Regarding follower personality traits, both Study 1 and Study 2 revealed that follower extraversion and agreeableness had the strongest relationships with the L factor (as perceived by followers; see Figure 6 and Figure 10). It is noteworthy that extraversion and agreeableness traits both implicate tendencies to engage in interpersonal behavior. As such, this finding might be due to

stimulus sensitivity (i.e., extraverted and agreeable followers could be more attuned to supportive interpersonal behaviors from the leader), due to situation selection (i.e., extraverted and agreeable followers gravitate toward more supportive leaders), or due to the possibility that extraverted and agreeable followers elicit more supportive behavior from leaders. Further, the L factor strongly predicts various individual-level outcomes (job performance, OCB, job satisfaction and organizational commitment), in both the meta-analytic and primary data. Indeed, the L factor seems to predict these outcomes more strongly than the lower-order leadership dimensions do (Newman et al., 2016).

On a different note, a helpful dissertation committee member curiously questioned whether the L factor exists separate from one's *liking* of the leader, where liking is operationalized as how much the follower likes the leader as a person or friend. According to theory, liking of one's leader is a fundamental part of the core definition of LMX. In the current study, liking of the leader can be captured by the three-item *affect* dimension in the LMX-MDM (Liden & Maslyn, 1998). I estimated a model that was an extension of Model 3b by including liking (i.e., the LMX-MDM affect dimension) as a directly-measured common factor onto which all items were allowed to load. The fit indices were nearly adequate (RMSEA = .041; SRMR = .096; CFI = .90; TLI = .89), and the parameter estimates indicated that leader liking does indeed play a dominant role in the L factor. The average factor loading of the items onto the liking factor was .64. With liking accounted for, the average factor loading of the items onto the L factor dropped from .66 (Model 3b; Table 13c) to .28. In summary, whether a follower likes the leader seems to be empirically central to the L factor.

The current dissertation's findings also have implications for practice. Extant research on leadership may not be unique to the focal leadership construct, but instead may generalize across

dimensions of leader behavior. For example, empirical findings regarding leader consideration may be relevant for understanding LMX, and vice versa. The antecedents and consequences of one lower-order leadership construct may be the same for other leadership dimensions, due to their common role in reflecting the L factor. For researchers interested in developing new theories and corresponding measures, it would be informative to carefully review existing literature and to acknowledge classic constructs. These would-be new theories should explicitly differentiate themselves (and acknowledge any similarities) with extant constructs in several ways, including concept definition, item content, empirical overlap, and nomological overlap.

Limitations and Future Directions

Although this dissertation was included both meta-analytic and primary data, it contains some limitations which provide directions for future research. First, although we attempted to control for common method variance by directly measuring several variables (i.e., social desirability, positive affect, and negative affect) in the primary data collection, a few potential problems still remain. In particular, all survey responses were collected at a single time point, which may inflate intercorrelations of study variables. One solution would be to administer the same survey to the same participants at a second time point. Then, the lagged correlations amongst variables could be used as a basis for model comparisons, as a procedural remedy for transient sources of common method bias (Johnson et al., 2011; Podsakoff et al., 2003).

A second limitation of this dissertation was that the primary data collection consisted of solely self-report responses from employees. Data obtained from a single source could be another potential cause of common method bias. To address this, data should be collected from more than one rater source, such as both followers and leaders in dyads. Other potential rating sources include the leaders' supervisors and the leaders' peers. Having ratings from multiple

rater sources is related to the issue of self-other agreement, or the extent to which employees' self-ratings overlap with ratings from observers. A recent meta-analysis (Lee & Carpenter, under review) has shown that the self-other agreement for leader behaviors is only moderate (in the .30 range; cf. Sin, Nahrgang, & Morgeson, 2009). Different individuals have different relationships with the focal leader, and consequently may be influenced by different factors when providing ratings of the focal leader. This suggests that collecting survey responses on leader behavior from raters other than the follower may yield different findings, and comparing ratings from different rater sources would be insightful.

A third area for potential research involves item content analysis. One of the areas in which construct redundancy can be investigated is item content, or the actual wording of items. Upon reading the items across different inventories, it may be revealed that items can be grouped into categories or themes, different from the original inventories. Understanding how items from different scales may be categorized together can lead to a more comprehensive taxonomy that incorporates different theories and inventories. For example, results of this dissertation indicated that the three items measuring the *contribution* facet of the LMX-MDM had weaker loadings onto the L factor. This is probably because contribution involves followers' willingness to put extra effort into their work, which is more similar to OCB than to leadership behaviors. This category of OCB may have emerged in an item content analysis. In this dissertation, I attempted to conduct a preliminary analysis to examine the wording of items in popular leadership inventories. I conducted a Q sort in which I put each item on an individual flashcard and attempted to sort them into categories—it was difficult to discern a parsimonious set of categories on the basis of item content. A future step would be to have numerous participants (including leadership scholars) also complete this Q sort, and to examine their categorizations.

Results may indicate that items from different leadership scales get sorted together, which could suggest broad themes into which leader behaviors can be conceptualized.

Finally, a fourth limitation of this dissertation is that level of analysis was not acknowledged. Leader consideration as defined by the LBDQ conceptualizes leader behavior as varying between leaders. In other words, each leader has an average leadership style and generally treats her/his followers the same way. In contrast, LMX theory suggests that leaders do not behave consistently across followers, and that dyadic relationships may differ (i.e., within-leader variation). Specifically, leaders treat different followers in unique ways, depending on their particular relationships, which evolve over time. Therefore, the same leader can behave in different ways. The current study primarily focused on between-leader variance, and as such the current results might not generalize to the within-leaders level of analysis (cf. Henderson, Liden, Glibkowski, & Chaudhry, 2009).

TABLES AND FIGURES

Table 1

Means, Standard Deviations, Correlations, and Factor Loadings of Follower-Ratings of 10 Leader Behavior Dimensions from Hemphill & Coons (1957, p. 22)

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	F1	F2	F3
1. Domination	4.4	12.7	(.88)										.86	nr	nr
2. Initiation	5.9	8.8	-.56	(.85)									.71	.41	nr
3. Membership	6.9	9.3	-.64	.51	(.81)								.78	nr	nr
4. Representation	9.5	9.7	-.46	.60	.58	(.88)							.64	.43	nr
5. Integration	9.2	9.0	-.57	.60	.65	.77	(.80)						.75	.30	.38
6. Organization	12.1	9.6	-.10	.37	.24	.58	.56	(.87)					nr	.57	.65
7. Communication Up	9.9	5.8	-.50	.57	.60	.69	.75	.65	(.87)				.64	nr	.56
8. Communication Down	12.0	7.7	-.55	.63	.62	.77	.81	.65	.79	(.84)			.69	.36	.51
9. Recognition	4.0	6.8	-.53	.59	.62	.72	.75	.57	.74	.78	(.71)		.71	.28	.43
10. Production	3.0	6.9	.35	.14	-.12	.22	.12	.50	.16	.21	.11	(.78)	nr	.66	nr
11. Evaluation	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	.64	.37	nr

Note. N = 205 subordinates. Odd-even reliabilities appear in parentheses. nr - not reported. F1 = "Maintenance of Membership Character"; F2 = "Objective Attainment Behavior"; F3 = "Group Interaction Facilitation Behavior."

Table 2

Means, Standard Deviations, Correlations, and Factor Loadings of Leaders' Self-Ratings of 10 Leader Behavior Dimensions from Hemphill & Coons (1957, p. 23)

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	F1	F2	F3
1. Domination	12.0	9.0	(.76)										.58	nr	nr
2. Initiation	9.6	5.5	-.24	(.54)									.52	.37	nr
3. Membership	12.8	6.6	-.40	.34	(.58)								.69	nr	nr
4. Representation	13.0	6.9	-.06	.50	0.3	(.82)							.39	.64	nr
5. Integration	15.3	6.0	-.19	.45	0.44	.58	(.58)						.58	.50	.10
6. Organization	16.8	7.9	.29	.27	0.01	.57	.38	(.84)					nr	.77	.30
7. Communication Up	14.0	3.4	-.27	.33	0.37	.44	.46	.38	(.64)				.45	nr	.55
8. Communication Down	17.2	4.9	-.17	.45	0.37	.60	.59	.54	.61	(.66)			.42	.55	.49
9. Recognition	7.9	4.5	-.04	.28	0.15	.43	.33	.38	.36	.43	(.59)		.18	.43	.33
10. Production	3.4	5.3	.28	.21	.08	.34	.27	.50	.15	.38	.34	(.75)	nr	.67	nr
11. Evaluation													.06	.39	nr

Note. N = 152 leaders. Odd-even reliabilities appear in parentheses. Nr - not reported. F1 = "Maintenance of Membership Character"; F2 = "Objective Attainment Behavior"; F3 = "Group Interaction Facilitation Behavior."

Table 3

Means, Standard Deviations, and Correlation of Subordinate-Ratings of Leader Behaviors from Halpin & Winer (1957, p. 40)

Variable	M	SD	1	2	3	4	5	6	7	8
1. Leadership Quality	88.1	20.0								
2. Domination[a]	29.1	9.1	.61							
3. Organization[a]	51.2	8.3	.73	.30						
4. Production[a]	28.1	5.9	.40	-.18	.60					
5. Communication	58.3	11.6	.91	.57	.72	.41				
6. Membership[a]	28.0	7.8	.81	.61	.47	.23	.79			
7. Goal Direction	25.4	6.4	.89	.44	.78	.54	.84	.69		
8. Initiative[a]	39.6	8.2	.87	.49	.69	.47	.80	.66	.82	

Note. N = 300 subordinates rating 52 leaders. [a] The least highly intercorrelated dimensions (2, 3, 4, 6 and 8) were selected for use on the factor analysis.

Table 4

Halpin & Winer's (1957, p. 47) Factor Loadings for Consideration Items

Item	Consideration	Initiating Structure	Production Emphasis	Social Sensitivity
He does personal favors for group members.	.68	-.05	.06	.10
He does little things to make it pleasant to be a member of the group.	.74	-.10	.12	.11
He is easy to understand.	.69	.12	-.01	.05
He finds time to listen to group members.	.81	.22	.03	.08
He keeps to himself. [R]	-.52	.07	.00	.05
He looks out for the personal welfare of individual group members.	.70	.15	.07	.03
He refuses to explain his actions. [R]	-.77	.09	-.04	-.14
He acts without consulting the group. [R]	-.62	.06	-.02	-.11
He backs up the members in their actions.	-.67	-.07	.02	-.13
He treats all group members as his equals.	.81	-.10	-.11	.12
He is willing to make changes.	.74	-.15	.05	.16
He is friendly and approachable.	.81	.07	.00	.25
He makes group members feel at ease when talking with them.	.74	.23	.03	.11
He puts suggestions made by the group into operation.	.67	.14	.11	-.11
He gets group approval on important matters before going ahead.	.63	.02	-.08	.00

Note. $N = 300$ subordinates rating 52 leaders. Halpin and Winer reported these factor loadings separately for the subset of Consideration items (they did not report loadings from the full set of items).

Table 5

Liden & Maslyn's (1998, p. 56) Confirmatory Factor Analysis Results for LMX-MDM Items

Item	Affect	Loyalty	Contribution	Respect
I like my supervisor very much as a person.	.851			
My supervisor is the kind of person one would like to have as a friend.	.864			
My supervisor is a lot of fun to work with.	.875			
My supervisor defends my work actions to a superior, even without complete knowledge of the issue in question.		.554		
My supervisor would come to my defense if I were "attacked" by others.		.775		
My supervisor would defend me to others in the organization if I made an honest mistake.		.856		
I do work for my supervisor that goes beyond what is specified in my job description.			.738	
I am willing to apply extra efforts, beyond those normally required to meet my supervisor's work goals.			.551	
I am impressed with my supervisor's knowledge of his/her job.				.846
I respect my supervisor's knowledge of and competence on the job.				.866
I admire my supervisor's professional skills.				.867

Note. N = 249 subordinates. Factor loadings are standardized. χ^2 (df) = 59.40 (38). CFI = .986. GFI = .960.

Table 6

Means, Standard Deviations, and Correlation for dimensions of LMX-MDM from Liden & Maslyn (1998, p. 57)

Variable	M	SD	1	2	3	4	M	SD
1. Affect	4.96	1.53		.65	.38	.67	5.42	1.28
2. Loyalty	5.06	1.25	.62		.38	.57	5.05	1.18
3. Contribution	5.59	1.21	.28	.26		.32	5.47	1.13
4. Respect	5.02	1.55	.63	.45	.26		5.51	1.14

Note. Values below the diagonal are from the sample of working students (*N* ranges from 301-302). Values above the diagonal are from the sample of organizational employees (*N* = 249). All correlations are significant at $p < .01$.

Table 7

Bass' (1985, p. 210-212) Principal Components Analysis on MLQ Items with Highest Loadings

Loadings				
N = 176	*N* = 104	Mean	Item #	Item
Charisma				
.90	.80	2.17	68	Makes everyone around him/her enthusiastic about assignments.
.88	.87	2.61	41	I have complete faith in him/her.
.86	.86	2.25	17	Is a model for me to follow.
.86	.82	2.62	40	Inspires loyalty to the organization.
.85	.84	2.24	26	Is an inspiration to us.
.85	.84	2.56	37	Inspires loyalty to him/her.
.83	.80	2.58	1	Makes me feel good to be around him/her.
.83	.79	2.75	12	Commands respect from everyone.
.83	.85	2.55	27	Makes me proud to be associated with him/her.
.80	.79	2.59	22	I am ready to trust his/her capacity to overcome any obstacles.
.79	.83	2.78	50	Encourages me to express my ideas and opinions.
.79	.71	2.17	29	Has a special gift of seeing what it is that is really important for me to consider.
.79	.74	2.43	18	In my mind, he/she is a symbol of success and accomplishment.
.77	.71	2.90	66	Has a sense of mission which he/she transmits to me.
.75	.72	2.18	42	Excites us with his/her visions of what we may accomplish if we work together.
.74	.81	2.39	60	Encourages understanding of points of view of other members.
.73	.73	2.24	38	Increases my optimism for the future.
.71	.75	2.48	62	Gives me a sense of overall purpose.
Intellectual Stimulation				
.69	.67	2.09	30	His/her ideas have forced me to rethink some of my own ideas which I had never questioned before.
.49	.63	2.12	32	Enables me to think about old problems in new ways.
.46	.47	2.03	19	Has provided me with new ways of looking at things which used to be a puzzle for me.

Table 7 (cont.)

Individualized Consideration				
Loadings				
N = 176	*N* = 104	Mean	Item #	Item
.56	.34	1.98	15	Gives personal attention to members who seem neglected.
.50	.37	2.14	10	Finds out what I want and tries to help me get it.
.50	.50	2.73	11	You can count on him/her to express his/her appreciation when you do a good job.
.50	.56	3.41	3	Is satisfied when I meet agreed-upon standards for good work.
.42	.54	3.31	6	I earn credit with him/her by doing my job well.
.42	.34	2.75	43	Treats each subordinate individually.
.40	.47	2.87	5	Makes me feel we can reach our goals without him/her if we have to.
Contingent Reward				
.67	.70	1.47	63	Tells me what to do if I want to be rewarded for my efforts.
.62	.55	1.68	72	There is close agreement between what I am expected to put into the group effort and what I can get out of it.
.61	.53	1.54	65	Gives me what I want in exchange for showing my support for him/her.
.58	.56	1.97	53	Whenever I feel like it, I can negotiate with him/her about whatI can get from what I accomplish.
.44	.40	1.75	21	Talks a lot about special commendations and promotions for good work.
.42	.44	2.14	7	Assures me I can get what I personally want in exchange for my efforts.
.42	.48	1.47	48	I decide what I want; he/she shows me how to get it.
Management-by-Exception				
.72	.70	1.91	69	As long as the old ways work, he/she is satisfied with my performance.
.67	.63	2.12	25	He/she is content to let me continue doing my job in the same way as always.
.66	.65	2.38	62	As long as things are going all right, he/she does not try to change anything.
.50		1.62	54	Asks no more of me than what is absolutely essential to get work done.
.45		1.80	71	It is all right if I take initiatives but he/she does not encourage me to do so.
.39		1.60	58	Only tells me what I have to know to do my job.

Note. For management-by-exception, items 54, 71 and 58 did not cluster into a separate factor when *N* = 104, so Bass (1985) did not report the loadings for these items. For charisma, Bass (1985) only reported "items most heavily loaded on this factor (.70 or above)."

Table 8

Bass' (1985, p. 215) Higher Order Factor Analysis of MLQ

	Higher Order Factors	
First Order Factor	Active-Proactive Leadership	Passive-Reactive Leadership
Charisma	.90	.00
Contingent Reward	.78	.20
Individualized Consideration	.84	-.01
Management-by-exception	.16	.44
Intellectual Stimulation	.72	.00

Note. $N = 176$.

Table 9

Podsakoff et al.'s (1990, p. 114) Confirmatory Factor Analysis of Leader Behavior Items

Item	M	SD	Artic. Vision	Provide Approp. Model	Foster. Accept. Goals	High Perf. Expect.	Individ. Support	Intell. Stim.	Contin. Reward
First-Order Transformational Leader Behavior Factors									
Has a clear understanding of where we are going.	5.07	1.67	1.000						
Paints an interesting picture of the future for our group.	4.68	1.72	.910						
Is always seeking new opportunities for the organization.	4.90	1.91	1.070						
Inspires others with his/her plans for the future.	4.41	1.68	1.146						
Is able to get others committed to his/her dream.	4.43	1.57	1.045						
Leads by "doing," rather than simply by "telling."	4.35	1.93		1.000					
Provides a good model for me to follow.	4.80	1.84		1.135					
Leads by example.	4.87	1.87		1.189					
Fosters collaboration among work groups.	4.72	1.66			1.000				
Encourages employees to be "team players."	5.40	1.62			1.191				
Gets the group to work together for the same goal.	5.00	1.62			1.305				
Develops a team attitude and spirit among employees.	4.79	1.82			1.485				
Shows us that he/she expects a lot from us.	5.75	1.41				1.000			
Insists on only the best performance.	5.46	1.39				1.206			
Will not settle for second best.	5.12	1.62				1.165			
Acts without considering my feelings [R].	4.48	2.01					1.000		
Shows respect for my personal feelings.	4.79	1.78					1.063		
Behaves in a manner thoughtful of my personal needs.	4.76	1.71					1.031		
Treats me without considering my personal feelings [R].	4.85	1.84					1.008		
Challenges me to think about old problems in new ways.	4.97	1.46						1.000	
Asks questions that prompt me to think.	5.16	1.41						.930	

Table 9 (cont.)

Item	M	SD	Artic. Vision	Provide Approp. Model	Foster. Accept. Goals	High Perf. Expect.	Individ. Support	Intell. Stim.	Contin. Reward
Has stimulated me to rethink the way I do things.	5.00	1.50						1.057	
Has ideas that have challenged me to reexamine some of basic assumptions about my work.	4.90	1.47						1.018	
First-Order Transactional Leader Behavior Factor									1.000
Always gives me positive feedback when I perform well.	4.78	1.90							.937
gives me special recognition when my work is very good.	4.70	1.75							.912
Commends me when I do better than average job.	4.89	1.60							.975
Personally compliments me when I do outstanding work.	5.01	1.71							.916
Frequently does not acknowledge my good performance [R].	4.73	1.81							
Second-Order Transformational Leader Behavior Construct			**Core Transformational Behaviors**						
Articulating a vision.					1.000				
Providing an appropriate model.					1.078				
Fostering acceptance of group goals.					.832				

Note. $\chi 2$ (df) = 877.07 (337). TLI = .973.

Table 10a

Meta-Analytic Estimates of Intercorrelations Among Study Variables – Study 1

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. LMX *k/N*													
2. TFL *k/N*	.73[e] 20/5451												
3. CR *k/N*	.73[e] 6/1900	.80[j] 87/22639											
4. Consid *k/N*	.74[u] 17/5067	.67[u] 25/7378	.78[d] 4/1708										
5. Em stab *k/N*	.01[x] 3/711	.17a 18/3380	.10[a] 7/1532	.15[d] 4/635									
6. Agree *k/N*	.18[e] 4/859	.14[a] 18/3916	.17[a] 7/1622	.26[d] 4/635	.25[q] 18/3690								
7. Conscient *k/N*	.10[x] 4/835	.13[a] 18/3516	.02[a] 6/1469	.30[d] 4/635	.26[q] 26/5380	.27[q] 344/162975							
8. Extraver *k/N*	.18[e] 4/859	.24[a] 20/3692	.14[a] 5/1215	.33[d] 4/635	.19[q] 60/10926	.17[q] 243/135529	.02[q] 61/21603						
9. Openness *k/N*	.02[x] 3/711	.15[a] 19/3887	.03[a] 6/1469	.05[d] 4/635	.16[q] 21/4870	.11[q] 236/144205	.22[q] 46/13182	.17[q] 418/252004					
10. Job perf *k/N*	.30[n] 146/32670	.21[v] 31/7016	.28[s] 50/9180	.13[w] 21/3808									
11. OCB *k/N*	.32[i] 38/7098	.30[v] 28/7970	.21[s] 3/554	.27[r] 6/2562						.32[t] 17/4448			
12. Job sati *k/N*	.49[e] 88/22520	.58[j] 18/5279	.52[s] 43/11461	.46[k] 76/11374						.30[l] 312/54471	.24[m] 22/7100		

Table 10a (cont.)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
13. A com	.41[e]	.46[p]	.46[s]	.34[o]						.17[p]	.27[p]	.65[p]	
k/N	21/8118	4/2361	3/1297	12/2642						69/23656	8/1815	69/23656	

Note. Each cell contains the correlation corrected for attenuation in the predictor and criterion, followed by *k* number of effect sizes and N sample size. [a] Bono & Judge (2004). [b] Chiaburu, Oh, Berry, Li & Gardner (2011). [c] Choi, Oh & Colbert (2015). [d] DeRue, Nahrgang, Wellman & Humphrey (2011). [e] Dulebohn, Bommer, Liden, Brouer & Ferris (2012). [f] Gottfredson & Aguinis (2016). [g] Hurtz & Donovan (2000). [h] Iaffaldano & Muchinsky (1985). [i] Ilies, Nahrgang & Morgeson (2007). [j] Judge & Piccolo (2004). [l] Judge, Piccolo & Ilies (2004). [m] LePine, Erez & Johnson (2002). [n] Martin, Guillame, Thomas, Lee & Epitropaki (2016). [o] Mathieu & Zajac (1990). [p] Meyer, Stanley, Herscovitch & Topolnytsky (2002). [q] Ones, Viswesvaran & Reiss (1996). [r] Organ & Ryan (1995). [s] Podsakoff, Bommer, Podsakoff & MacKenzie (2006). [t] Podsakoff, Whiting, Podsakoff & Blume (2009). [u] Rowold, Borgmann & Diebig (2015). [v] Wang, Oh, Courtright & Colbert (2011). [w] Wofford & Liska (1993). [x] Original meta-analyses from current study.

Table 10b

Results from Original Meta-Analyses from Study 1

Variables	**N**	***k***	r_m	SD_r	ρ	SD_ρ	**% Var**	CV_{10}	CV_{90}	CI_L	CI_U
LMX-Conscientiousness	835	4	.08	.07	.10	.03	86.15	.06	.14	.01	.18
LMX-Emotional Stability	711	3	.01	.07	.01	.03	86.53	-.02	.05	-.08	.11
LMX-Openness	711	3	.02	.05	.02	.00	100.00	.02	.02	-.05	.09
Consideration-Contingent Reward	1,708	4			.78						

Note. The meta-analytic correlation between consideration and contingent reward was updated from DeRue et al. (2011) by including 2 primary studies from Piccolo et al. (2012). Correlations were corrected for unreliability in the predictor and the criterion.

Table 11a

Specific Validity of Lower-order Leadership Constructs - Study 1

Criterion	Leadership (IV)	Validity (β)	L factor alone (R^2)	L + 1 factor (R^2)	ΔR^2
Performance	L factor[a]	.274*	.075		
	Consid.[b]	-.102		.041	0[c]
	LMX[b]	.071		.109	.034
	CR[b]	.029		.089	.014
	TFL[b]	-.025		.065	0[c]
				Average =	.012
OCB	L factor[a]	.305*	.093		
	Consid.[b]	.014		.099	.006
	LMX[b]	.065		.126	.033
	CR[b]	-.069		.062	0[c]
	TFL[b]	.039		.112	.019
				Average =	.015
Job Satisfaction	L factor[a]	.594*	.353		
	Consid.[b]	-.038		.330	0[c]
	LMX[b]	-.005		.350	0[c]
	CR[b]	-.021		.339	0[c]
	TFL[b]	.068		.398	.045
				Average =	.011
Affect Commit	L factor[a]	.409*	.179		
	Consid.[b]	-.003		.177	0[c]
	LMX[b]	.071		.223	.044
	CR[b]	.086		.238	.059
	TFL[b]	.109*		.252	.073
				Average =	.044

Note. Each row below the L factor represents a separate regression model. Validity estimates are standardized. L factor is indicated by consideration, LMX, contingent reward, and transformational leadership. Variance of CR is fixed to .001. Validity = predictive validity of leadership constructs. [a] =Validity for L factor is the coefficient of the L factor alone predicting a criterion. [b] = Validity for each first-order leadership factor is the validity of that factor predicting a criterion, over and above the L factor. L factor alone = R^2 when L factor predicts a criterion. L + 1 factor = R^2 when a specific is added to the L factor when predicting a criterion. ΔR^2 = change in R^2 when a specific factor is added to the L factor when predicting a criterion. [c] = Negative ΔR^2 estimates were reset to zero.

Table 11b

Personality Traits Predicting Lower-order Leadership Factors Beyond L factor – Study 1

Predictor	**Leadership (DV)**	**Personality Validity (β)**	**L factor alone (R^2)**	**L + Personality (R^2)**	**ΔR^2**
Em Stability	Consid.[a]	.061*	.716	.721	.005
	LMX	-.107*	.694	.706	.012
	CR	-.011	.830	.830	.000
	TFL	.087*	.730	.739	.009
				Average =	.007
Agree	Consid.	.101*	.716	.733	.017
	LMX	.009	.692	.692	.000
	CR	-.028	.827	.826	0[b]
	TFL	-.047	.726	.725	0[b]
				Average =	.004
Conscient	Consid.	.228*	.718	.781	.063
	LMX	-.014	.694	.694	.000
	CR	-.165*	.826	.853	.027
	TFL	.021	.729	.731	.002
				Average =	.023
Extraversion	Consid.	.152*	.719	.757	.038
	LMX	-.025	.693	.691	0[b]
	CR	-.124*	.823	.832	.009
	TFL	.045	.729	.736	.007
				Average =	.014
Openness	Consid.	-.004	.718	.718	.000
	LMX	-.038	.696	.698	.002
	CR	-.042	.831	.834	.003
	TFL	.122*	.731	.746	.015
				Average =	.005

Note. Each row represents a separate regression model. Validity estimates are standardized. L factor is indicated by consideration, LMX, contingent reward, and transformational leadership. Validity = predictive validity of Big Five personality traits. [a] = Validity for each first-order leadership factor is the validity of the personality trait predicting each first-order factor, over and above the L factor. L factor alone = R^2 for the L factor predicting each lower-order leadership trait. L + Personality = R^2 when a personality trait is added to the L factor to together predict each lower-order leadership trait. ΔR^2 = change in R^2 when a personality trait is added to the L factor when predicting each lower order leadership trait (shows incremental validity of each personality trait predicting each lower-order leadership factor, above and beyond the L factor). [b] = Negative ΔR^2 estimates were reset to zero.

Table 12
Descriptive Statistics and Correlations of Variables – Study 2

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Consid	3.57	.86	.91																					
2. LMX-7	3.65	.90	.83	.93																				
3. LMX-MDM	3.85	.91	.81	.86	.95																			
4. MLQ-CR	3.6	.93	.75	.77	.75	.85																		
5. MLQ-TFL	3.53	.89	.81	.82	.83	.89	.97																	
6. TLI-TFL	3.69	.87	.81	.84	.86	.84	.91	.96																
7. TLI-CR	3.62	1.16	.75	.78	.75	.75	.76	.80	.93															
8. Extrav	3.01	.94	.22	.23	.22	.28	.30	.23	.20	.89														
9. Agreeab	3.92	.73	.31	.32	.36	.31	.35	.34	.29	.30	.85													
10. Conscien	3.92	.57	.24	.26	.28	.25	.27	.27	.21	.28	.54	.70												
11. Neurot	2.51	.98	-.28	-.29	-.24	-.24	-.26	-.25	-.24	-.43	-.51	-.53	.91											
12. Openness	3.75	.69	.15	.16	.18	.20	.23	.20	.16	.26	.29	.31	-.19	.85										
13. Soc Des	3.01	.47	-.20	-.18	-.17	-.11	-.16	-.16	-.14	-.20	-.37	-.36	.45	-.08	.96									
14. PA	3.32	.84	.26	.29	.28	.34	.36	.30	.24	.50	.45	.47	-.46	.35	-.19	.92								
15. NA	1.60	.73	-.22	-.22	-.20	-.15	-.18	-.21	-.18	-.25	-.47	-.50	.65	-.15	.41	-.25	.93							
16. Job Sat.	3.68	1.03	.56	.59	.61	.52	.58	.60	.55	.29	.39	.39	-.37	.17	-.30	.37	-.34	.94						
17. Aff. Com	3.28	1.05	.55	.58	.61	.53	.60	.62	.54	.31	.36	.28	-.31	.17	-.24	.38	-.24	.77	.91					
18. Task Perf	4.49	.62	.16	.22	.24	.20	.20	.21	.18	.04	.40	.55	-.27	.29	-.25	.21	-.34	.33	.15	.87				
19. OCB	4.16	.56	.33	.37	.45	.36	.41	.39	.32	.22	.60	.55	-.34	.38	-.26	.38	-.33	.44	.40	.63	.80			
20. CWB	1.49	.54	-.21	-.19	-.23	-.16	-.19	-.20	-.15	-.09	-.49	-.47	.31	-.18	.38	-.14	.49	-.32	-.21	-.51	-.52	.93		
21. Withdr	1.45	.56	-.20	-.20	-.23	-.16	-.19	-.19	-.16	-.08	-.41	-.43	.28	-.17	.34	-.15	.46	-.28	-.20	-.46	-.48	.84	.85	
22. Turn Int	2.11	1.32	-.40	-.44	-.45	-.38	-.42	-.44	-.38	-.15	-.24	-.24	.26	.00	.24	-.20	.25	-.66	-.66	-.17	-.25	.28	.25	.97

Note. N = 941. Cronbach's alphas are in the diagonal. MLQ-CR = contingent reward measured by the MLQ; MLQ-TFL = transformational leadership measured by the MLQ; TLI-CR = contingent reward measured by the TLI; TLI-TFL = transformational leadership measured by the TLI.

Table 13a

Parameter Estimates for Model 1 (Oblique) - Study 2

Item	Con	LMX	CR	TFL	LMXA	LMXL	LMXC	LMXR	MLQII	MLQIM	MLQIS	MLQIC	TLIar	TLImo	TLIfo	TLIhi	TLIsu	TLIst
Con1	.68																	
Con2	.70																	
Con3	.74																	
Con4	.81																	
Con5	.76																	
Con6	.65																	
Con7	.77																	
Con8	.44																	
Con9	.84																	
Con10	.76																	
LMX1		.75																
LMX2		.78																
LMX3		.82																
LMX4		.81																
LMX5		.78																
LMX6		.82																
LMX7		.87																
LMXA		.92																
LMXL		.92																
LMXC		.67																
LMXR		.86																
MDM1					.91													
MDM2					.91													
MDM3					.89													
MDM4						.84												
MDM5						.90												
MDM6						.89												

Table 13a (cont.)

Item	Con	LMX	CR	TFL	LMXA	LMXL	LMXC	LMXR	MLQII	MLQIM	MLQIS	MLQIC	TLIar	TLImo	TLIfo	TLIhi	TLIsu	TLIst
MDM7							.68											
MDM8							.88											
MDM9							.79											
MDM10								.90										
MDM11								.91										
MDM12								.89										
MLQC1			.72															
MLQC2			.59															
MLQC3			.70															
MLQC4			.80															
TLICR1			.88															
TLICR2			.90															
TLICR3			.92															
TLICR4			.91															
TLICR5			.61															
MLQII				.98														
MLQIM				.92														
MLQIS				.94														
MLQIC				.98														
TLIar				.92														
TLImo				.91														
TLIfo				.91														
TLIhi				.57														
TLIsu				.87														
TLIst				.86														
MLQT2									.57									
MLQT5									.86									

Table 13a (cont.)

Item	Con	LMX	CR	TFL	LMXA	LMXL	LMXC	LMXR	MLQII	MLQIM	MLQIS	MLQIC	TLIar	TLImo	TLIfo	TLIhi	TLIsu	TLIst
MLQT7									.72									
MLQT9									.83									
MLQT11									.87									
MLQT12									.77									
MLQT13									.59									
MLQT19									.75									
MLQT4										.80								
MLQT6										.81								
MLQT14										.84								
MLQT20										.82								
MLQT1											.72							
MLQT3											.78							
MLQT16											.84							
MLQT18											.81							
MLQT8												.77						
MLQT10												.81						
MLQT15												.85						
MLQT17												.86						
TLIT1													.76					
TLIT2													.82					
TLIT3													.76					
TLIT4													.90					
TLIT5													.88					
TLIT6														.87				
TLIT7														.91				
TLIT8														.93				
TLIT9															.87			

Table 13a (cont.)

Item	Con	LMX	CR	TFL	LMXA	LMXL	LMXC	LMXR	MLQII	MLQIM	MLQIS	MLQIC	TLIar	TLImo	TLIfo	TLIhi	TLIsu	TLIst
TLIT10															.83			
TLIT11															.86			
TLIT12															.90			
TLIT13																.81		
TLIT14																.92		
TLIT15																.63		
TLIT16																	.68	
TLIT17																	.92	
TLIT18																	.93	
TLIT19																	.44	
TLIT20																		.82
TLIT21																		.88
TLIT22																		.87
TLIT23																		.85
Factor correlations																		
LMX	.91																	
CR	.82	.87																
T	.89	.92	.90															

Note. Parameter estimates are standardized. CR = contingent reward; T = transformational leadership; MDM = LMX-MDM; LMXA = LMX-MDM affect; LMXL = LMX-MDM loyalty; LMXC = LMX-MDM contribution; LMXR = LMX-MDM respect; MLQCR = contingent reward scale from MLQ; TLICR = contingent reward scale from TLI; MLQT = transformational leadership scale from MLQ; MLQII = idealized influence; MLQIM = inspirational motivation; MLQIS = intellectual stimulation; MLQIC = individualized consideration; TLIT = transformational leadership scale from TLI; TLIar = articulating appealing vision; TLImo = provide appropriate model; TLIfo = fostering acceptance of group goals; TLIhi = high performance expectations; TLIsu = individualized support; TLIst = intellectual stimulation.

Table 13b

Parameter Estimates for Model 2 (Hierarchical) - Study 2

Item	Con	LMX	CR	T	LMXA	LMXL	LMXC	LMXR	MLQII	MLQIM	MLQIS	MLQIC	TLIar	TLImo	TLIfo	TLIhi	TLIsu	TLIst
Con1	.68																	
Con2	.70																	
Con3	.74																	
Con4	.81																	
Con5	.76																	
Con6	.65																	
Con7	.77																	
Con8	.44																	
Con9	.84																	
Con10	.76																	
LMX1		.75																
LMX2		.78																
LMX3		.82																
LMX4		.81																
LMX5		.78																
LMX6		.82																
LMX7		.87																
LMXA		.92																
LMXL		.92																
LMXC		.67																
LMXR		.86																
MDM1					.91													
MDM2					.91													
MDM3					.89													
MDM4						.84												
MDM5						.90												
MDM6						.89												
MDM7							.68											
MDM8							.88											
MDM9							.79											
MDM10								.90										
MDM11								.91										
MDM12								.89										
MLQCR1			.72															
MLQCR2			.59															
MLQCR3			.69															
MLQCR4			.80															

Table 13b (cont.)

Item	Con	LMX	CR	T	LMXA	LMXL	LMXC	LMXR	MLQII	MLQIM	MLQIS	MLQIC	TLIar	TLImo	TLIfo	TLIhi	TLIsu	TLIst
TLICR1			.88															
TLICR2			.90															
TLICR3			.92															
TLICR4			.91															
TLICR5			.62															
MLQII				.99														
MLQIM				.92														
MLQIS				.94														
MLQIC				.98														
TLIar				.92														
TLImo				.91														
TLIfo				.91														
TLIhi				.57														
TLIsu				.87														
TLIsti				.86														
MLQT2									.57									
MLQT5									.85									
MLQT7									.72									
MLQT9									.83									
MLQT11									.87									
MLQT12									.77									
MLQT13									.59									
MLQT19									.75									
MLQT4										.80								
MLQT6										.80								
MLQT14										.84								
MLQT20										.82								
MLQT1											.72							
MLQT3											.78							
MLQT16											.84							
MLQT18											.81							
MLQT8												.77						
MLQT10												.81						
MLQT15												.85						
MLQT17												.86						
TLIT1													.76					
TLIT2													.82					
TLIT3													.76					

Table 13b (cont.)

Item	Con	LMX	CR	T	LMXA	LMXL	LMXC	LMXR	MLQII	MLQIM	MLQIS	MLQIC	TLIar	TLImo	TLIfo	TLIhi	TLIsu	TLIst
TLIT4													.90					
TLIT5													.88					
TLIT6														.87				
TLIT7														.91				
TLIT8														.92				
TLIT9															.87			
TLIT10															.83			
TLIT11															.86			
TLIT12															.90			
TLIT13																.81		
TLIT14																.92		
TLIT15																.63		
TLIT16																	.68	
TLIT17																	.92	
TLIT18																	.93	
TLIT19																	.44	
TLIT20																		.82
TLIT21																		.88
TLIT22																		.87
TLIT23																		.85
L factor loadings	.93	.96	.91	.96														

Note. Parameter estimates are standardized. CR = contingent reward; T = transformational leadership; MDM = LMX-MDM LMXA = LMX-MDM affect; LMXL = LMX-MDM loyalty; LMXC = LMX-MDM contribution; LMXR = LMX-MDM respect; MLQCR = contingent reward scale from MLQ; TLICR = contingent reward scale from TLI; MLQII = idealized influence; MLQIM = inspirational motivation; MLQIS = intellectual stimulation; MLQIC = individualized consideration; MLQT = transformational leadership scale from MLQ; TLIF = transformational leadership scale from TLI; TLIar = articulating appealing vision; TLImo = provide appropriate model; TLIfo = fostering acceptance of group goals; TLIhi = high performance expectations; TLIsu = individualized support; TLIst = intellectual stimulation.

Table 13c

Parameter Estimates for Model 2b (Hierarchical) Corrected for Common Method Bias – Study 2

Item	Con	LMX	CR	T	LMXA	LMXL	LMXC	LMXR	MLQII	MLQIM	MLQIS	MLQIC	TLIar	TLImo	TLIfo	TLIhi	TLIsu	TLIst
Con1	.65																	
Con2	.64																	
Con3	.71																	
Con4	.77																	
Con5	.70																	
Con6	.62																	
Con7	.71																	
Con8	.40																	
Con9	.80																	
Con10	.71																	
LMX1		.70																
LMX2		.73																
LMX3		.77																
LMX4		.77																
LMX5		.73																
LMX6		.79																
LMX7		.83																
LMXA		.91																
LMXL		.91																
LMXC		.62																
LMXR		.85																
MDM1					.88													
MDM2					.87													
MDM3					.85													
MDM4						.80												
MDM5						.88												
MDM6						.88												
MDM7							.62											
MDM8							.81											
MDM9							.75											
MDM10								.87										
MDM11								.89										
MDM12								.86										
MLQCR1			.66															
MLQCR2			.50															
MLQCR3			.63															
MLQCR4			.76															

Table 13c (cont.)

Item	Con	LMX	CR	T	LMXA	LMXL	LMXC	LMXR	MLQII	MLQIM	MLQIS	MLQIC	TLIar	TLImo	TLIfo	TLIhi	TLIsu	TLIst
TLICR1			.85															
TLICR2			.87															
TLICR3			.89															
TLICR4			.88															
TLICR5			.60															
MLQII				.98														
MLQIM				.90														
MLQIS				.93														
MLQIC				.98														
TLIar				.90														
TLImo				.90														
TLIfo				.90														
TLIhi				.51														
TLIsu				.86														
TLIsti				.84														
MLQT2									.49									
MLQT5									.77									
MLQT7									.64									
MLQT9									.78									
MLQT11									.81									
MLQT12									.72									
MLQT13									.50									
MLQT19									.68									
MLQT4										.74								
MLQT6										.74								
MLQT14										.76								
MLQT20										.78								
MLQT1											.67							
MLQT3											.73							
MLQT16											.77							
MLQT18											.73							
MLQT8												.70						
MLQT10												.77						
MLQT15												.80						
MLQT17												.80						
TLIT1													.70					
TLIT2													.77					
TLIT3													.72					

Table 13c (cont.)

Item	Con	LMX	CR	T	LMXA	LMXL	LMXC	LMXR	MLQII	MLQIM	MLQIS	MLQIC	TLIar	TLImo	TLIfo	TLIhi	TLIsu	TLIst
TLIT4													.84					
TLIT5													.83					
TLIT6														.84				
TLIT7														.88				
TLIT8														.89				
TLIT9															.84			
TLIT10															.79			
TLIT11															.82			
TLIT12															.86			
TLIT13																.76		
TLIT14																.88		
TLIT15																.60		
TLIT16																	.66	
TLIT17																	.89	
TLIT18																	.89	
TLIT19																	.42	
TLIT20																		.79
TLIT21																		.84
TLIT22																		.81
TLIT23																		.78
L factor loadings	.93	.96	.91	.96														

Note. Parameter estimates are standardized. CR = contingent reward; T = transformational leadership; MDM = LMX-MDM LMXA = LMX-MDM affect; LMXL = LMX-MDM loyalty; LMXC = LMX-MDM contribution; LMXR = LMX-MDM respect; MLQCR = contingent reward scale from MLQ; TLICR = contingent reward scale from TLI; MLQII = idealized influence; MLQIM = inspirational motivation; MLQIS = intellectual stimulation; MLQIC = individualized consideration; MLQT = transformational leadership scale from MLQ; TLIF = transformational leadership scale from TLI; TLIar = articulating appealing vision; TLImo = provide appropriate model; TLIfo = fostering acceptance of group goals; TLIhi = high performance expectations; TLIsu = individualized support; TLIst = intellectual stimulation.

Table 13d

Parameter Estimates for Model 3 (Bifactor) - Study 2

Item	L	Con	LMX	CR	T	LMXA	LMXL	LMXC	LMXR	MLQII	MLQIM	MLQIS	MLQIC	TLIar	TLImo	TLIfo	TLIhi	TLIsu	TLIst
Con1	.64	.23																	
Con2	.64	.28																	
Con3	.67	.37																	
Con4	.73	.35																	
Con5	.68	.38																	
Con6	.61	.19																	
Con7	.72	.27																	
Con8	.42	.09																	
Con9	.78	.29																	
Con10	.69	.33																	
LMX1	.70		.29																
LMX2	.75		.25																
LMX3	.78		.28																
LMX4	.76		.32																
LMX5	.73		.31																
LMX6	.78		.27																
LMX7	.81		.33																
LMXA			.37																
LMXL			.51																
LMXC			.23																
LMXR			.13																
MDM1	.81					.43													
MDM2	.80					.45													
MDM3	.83					.29													
MDM4	.75						.36												
MDM5	.78						.47												
MDM6	.78						.43	.60											
MDM7	.36							.78											
MDM8	.53							.47											
MDM9	.60								.45										
MDM10	.77								.56										
MDM11	.76								.32										
MDM12	.83																		
MLQCR1	.77			.03															

Table 13d (cont.)

Item	L	Con	LMX	CR	T	LMXA	LMXL	LMXC	LMXR	MLQII	MLQIM	MLQIS	MLQIC	TLIar	TLImo	TLIfo	TLIhi	TLIsu	TLIst
MLQCR2	.61			.01															
MLQCR3	.72			.04															
MLQCR4	.79			.16															
TLICR1	.79			.39															
TLICR2	.80			.43															
TLICR3	.81			.49															
TLICR4	.80			.46															
TLICR5	.54			.31															
MLQII					.97														
MLQIM					.86														
MLQIS					.63														
MLQIC					.54														
TLIar					.69														
TLImo					.06														
TLIfo					.22														
TLIhi					.49														
TLIsu					-.43														
TLIst					.46														
MLQT2	.51									.38									
MLQT5	.82									.22									
MLQT7	.65									.47									
MLQT9	.83									.08									
MLQT11	.86									.08									
MLQT12	.76									.08									
MLQT13	.52									.41									
MLQT19	.68									.40									
MLQT4	.67										.44								
MLQT6	.68										.44								
MLQT14	.72										.48								
MLQT20	.75										.29								
MLQT1	.68											.19							
MLQT3	.72											.27							
MLQT16	.75											.39							
MLQT18	.72											.41							
MLQT8	.73												.39						

Table 13d (cont.)

Item	L	Con	LMX	CR	T	LMXA	LMXL	LMXC	LMXR	MLQII	MLQIM	MLQIS	MLQIC	TLIar	TLImo	TLIfo	TLIhi	TLIsu	TLIst
MLQT10	.81												-.07						
MLQT15	.83												.05						
MLQT17	.83												.24						
TLIT1	.70													.29					
TLIT2	.72													.43					
TLIT3	.64													.46					
TLIT4	.78													.44					
TLIT5	.78													.39					
TLIT6	.76														.48				
TLIT7	.86														.27				
TLIT8	.84														.41				
TLIT9	.80															.31			
TLIT10	.71															.52			
TLIT11	.76															.44			
TLIT12	.84															.29			
TLIT13	.50																.62		
TLIT14	.43																.84		
TLIT15	.27																.59		
TLIT16	.62																	.38	
TLIT17	.84																	.36	
TLIT18	.84																	.34	
TLIT19	.38																	.31	
TLIT20	.69																		.43
TLIT21	.72																		.49
TLIT22	.71																		.51
TLIT23	.68																		.53

Note. Parameter estimates are standardized. CR = contingent reward; T = transformational leadership; MDM = LMX-MDM LMXA = LMX-MDM affect; LMXL = LMX-MDM loyalty; LMXC = LMX-MDM contribution; LMXR = LMX-MDM respect; MLQCR = contingent reward scale from MLQ; TLICR = contingent reward scale from TLI; MLQII = idealized influence; MLQIM = inspirational motivation; MLQIS = intellectual stimulation; MLQIC = individualized consideration; MLQT = transformational leadership scale from MLQ; TLIF = transformational leadership scale from TLI; TLIar = articulating appealing vision; TLImo = provide appropriate model; TLIfo = fostering acceptance of group goals; TLIhi = high performance expectations; TLIsu = individualized support; TLIst = intellectual stimulation.

Table 13e

Parameter Estimates for Model 3b (Bifactor) Corrected for Common Method Bias - Study 2

Item	L	Con	LMX	CR	T	LMXA	LMXL	LMXC	LMXR	MLQII	MLQIM	MLQIS	MLQIC	TLIar	TLImo	TLIfo	TLIhi	TLIsu	TLIst
Con1	.61	.20																	
Con2	.59	.26																	
Con3	.63	.36																	
Con4	.70	.34																	
Con5	.61	.40																	
Con6	.57	.20																	
Con7	.66	.27																	
Con8	.39	.07																	
Con9	.74	.29																	
Con10	.64	.34																	
LM1	.65		.28																
LMX2	.69		.24																
LMX3	.73		.28																
LMX4	.72		.33																
LMX5	.68		.32																
LMX6	.74		.27																
LMX7	.77		.33																
LMXA			.36																
LMXL			.52																
LMXC			.25																
LMXR			..12																
MDM1	.77					.43													
MDM2	.77					.45													
MDM3	.78					.30													
MDM4	.81						.37												
MDM5	.75						.46												
MDM6	.77						.42	..58											
MDM7	.27							.76											
MDM8	.43							.47											
MDM9	.54								.46										
MDM10	.73								.56										
MDM11	.74								.32										
MDM12	.79																		
MLQCR1	.72			.03															

Table 13e (cont.)

Item	L	Con	LMX	CR	T	LMXA	LMXL	LMXC	LMXR	MLQII	MLQIM	MLQIS	MLQIC	TLIar	TLImo	TLIfo	TLIhi	TLIsu	TLIst
MLQCR2	.53			.01															
MLQCR3	.65			.04															
MLQCR4	.75			.16															
TLICR1	.74			.40															
TLICR2	.77			.43															
TLICR3	.77			.49															
TLICR4	.77			.47															
TLICR5	.52			.31.32															
MLQII					.96														
MLQIM					.87														
MLQIS					.61														
MLQIC					.52														
TLIar					.71														
TLImo					.10														
TLIfo					.26														
TLIhi					..48														
TLIsu					-.38														
TLIst					.44														
MLQT2	.43									.34									
MLQT5	.74									.20									
MLQT7	.57									.46									
MLQT9	.77									.07									
MLQT11	.80									.07									
MLQT12	.71									.10									
MLQT13	.44									.40									
MLQT19	.63									.40									
MLQT4	.60										.44								
MLQT6	.61										.44								
MLQT14	.64										.47								
MLQT20	.71										.30								
MLQT1	.63											..18							
MLQT3	.66											.27							
MLQT16	.69											.37							
MLQT18	.65											.4							
MLQT8	.67												.39						

Table 13e (cont.)

Item	L	Con	LMX	CR	T	LMXA	LMXL	LMXC	LMXR	MLQII	MLQIM	MLQIS	MLQIC	TLIar	TLImo	TLIfo	TLIhi	TLIsu	TLIst
MLQT10	.77												-.07						
MLQT15	.78												.05						
MLQT17	.77												.23						
TLIT1	.64													.30					
TLIT2	.65													.44					
TLIT3	.58													.47					
TLIT4	.72													.44					
TLIT5	.72													.39					
TLIT6	.73														.48				
TLIT7	.82														.27				
TLIT8	.80														.41				
TLIT9	.77															.32			
TLIT10	.66															.52			
TLIT11	.71															.45			
TLIT12	.80															.29			
TLIT13	.44																.62		
TLIT14	.36																.83		
TLIT15	.21																.58		
TLIT16	.60																	.33	
TLIT17	.80																	.39	
TLIT18	.80																	.35	
TLIT19	.38																	.25	
TLIT20	.65																		.32
TLIT21	.68																		.49
TLIT22	.65																		.51
TLIT23	.61																		.52

Note. Parameter estimates are standardized. CR = contingent reward; T = transformational leadership; MDM = LMX-MDM LMXA = LMX-MDM affect; LMXL = LMX-MDM loyalty; LMXC = LMX-MDM contribution; LMXR = LMX-MDM respect; MLQCR = contingent reward scale from MLQ; TLICR = contingent reward scale from TLI; MLQII = idealized influence; MLQIM = inspirational motivation; MLQIS = intellectual stimulation; MLQIC = individualized consideration; MLQT = transformational leadership scale from MLQ; TLIF = transformational leadership scale from TLI; TLIar = articulating appealing vision; TLImo = provide appropriate model; TLIfo = fostering acceptance of group goals; TLIhi = high performance expectations; TLIsu = individualized support; TLIst = intellectual stimulation.

Table 13f

Parameter Estimates for Model 4 (Unidimensional) - Study 2

Item	L	Item	L	Item	L
Consid1	.63	MLQCR1	.77	TLITFL1	.72
Consid2	.64	MLQCR2	.63	TLITFL2	.74
Consid3	.67	MLQCR3	.73	TLITFL3	.67
Consid4	.73	MLQCR4	.79	TLITFL4	.81
Consid5	.69	TLICR1	.79	TLITFL5	.80
Consid6	.61	TLICR2	.81	TLITFL6	.76
Consid7	.72	TLICR3	.81	TLITFL7	.87
Consid8	.43	TLICR4	.81	TLITFL8	.84
Consid9	.78	TLICR5	.54	TLITFL9	.81
Consid10	.70	MLQTFL1	.68	TLITFL10	.73
LMX1	.72	MLQTFL2	.54	TLITFL11	.77
LMX2	.75	MLQTFL3	.73	TLITFL12	.85
LMX3	.79	MLQTFL4	.70	TLITFL13	.54
LMX4	.76	MLQTFL5	.83	TLITFL14	.48
LMX5	.73	MLQTFL6	.71	TLITFL15	.31
LMX6	.79	MLQTFL7	.74	TLITFL16	.60
LMX7	.82	MLQTFL8	.82	TLITFL17	.82
LMXMDM1	.81	MLQTFL9	.79	TLITFL18	.83
LMXMDM2	.80	MLQTFL10	.86	TLITFL19	.37
LMXMDM3	.83	MLQTFL11	.75	TLITFL20	.72
LMXMDM4	.76	MLQTFL12	.56	TLITFL21	.75
LMXMDM5	.78	MLQTFL13	.75	TLITFL22	.73
LMXMDM6	.78	MLQTFL14	.77	TLITFL23	.71
LMXMDM7	.38	MLQTFL15	.83		
LMXMDM8	.54	MLQTFL16	.74		
LMXMDM9	.61	MLQTFL17	.71		
LMXMDM10	.78	MLQTFL18	.77		
LMXMDM11	.78	MLQTFL19	.72		
LMXMDM12	.83	MLQTFL20	.74		

Note. Parameter estimates are standardized. CR = contingent reward; TFL = transformational leadership; LMXA = LMX-MDM affect; LMXL = LMX-MDM loyalty; LMXC = LMX-MDM contribution; LMXR = LMX-MDM respect; MLQII = idealized influence; MLQIM = inspirational motivation; MLQIS = intellectual stimulation; MLQIC = individualized consideration; TLIart = articulating appealing vision; TLImod = provide appropriate model; TLIfos = fostering acceptance of group goals; TLIhi = high performance expectations; TLIsupp = individualized support; TLIstim = intellectual stimulation.

Table 14a

Average Variance in Leadership Items due to L Factor vs. Group Factor (from Model 3; bifactor) - Study 2

Variable	% variance in items due to Group Factor	% variance in items due to L factor	% of systematic variance due to L factor
Consideration	.08	.44	.84
LMX	.18	.55	.75
LMX-7	.09	.57	.84
LMX-MDM	.23	.53	.76
Contingent Reward	.10	.55	.84
Transformational	.16	.52	.76
MLQ-TFL	.11	.54	.84
TLI-TFL	.21	.50	.70

Note. Standardized factor loadings were used. % variance in items due to Group Factor = average of squared factor loadings onto the specific group factor. % variance in items due to L factor = average of squared factor loadings onto the L factor. % of systematic variance due to L factor = L factor % variance/(group factor % variance + L factor % variance).

Table 14b

Average Variance in Leadership Items due to L Factor vs. Group Factor (from Model 3b; common method variance-bifactor) - Study 2

Variable	% variance in items due to Group Factor	% variance in items due to L factor	% systematic variance due to L factor
Consideration	.08	.37	.82
LMX	.17	.47	.73
LMX-7	.08	.49	.85
LMX-MDM	.22	.46	.67
Contingent Reward	.10	.48	.83
Transformational	.16	.43	.74
MLQ-TFL	.10	.44	.82
TLI-TFL	.20	.20	.50

Note. Standardized factor loadings were used. % variance in items due to Group Factor = average of squared factor loadings onto the specific group factor. % variance in items due to L factor = average of squared factor loadings onto the L factor. % of systematic variance due to L factor = L factor % variance/(group factor % variance + L factor % variance).

Table 15

L factor predicting criterion variables - Study 2

Criterion	Estimates	$\chi 2$	df	RMSEA	SRMR	CFI	TLI	AIC
Job satisfaction	.667*	13,208	3,808	.051	.053	.88	.88	166,331.89
Affective commitment	.664*	13,098	3,808	.051	.053	.88	.88	166,973.70
Task performance	.222*	13,057	3,721	.052	.055	.88	.88	166,404.00
OCB	.442*	15,416	4,351	.052	.060	.86	.86	184,874.89
CWB	-.181*	16,394	4,831	.050	.058	.86	.86	193,951.52
Withdrawal	-.220*	12,756	3,808	.050	.053	.88	.88	169,707.42
Turnover intentions	-.465*	12,012	3,383	.052	.053	.89	.89	155,052.21

Note. Path estimates are standardized.

Table 16

Specific Validities of Lower-Order Leadership Constructs in Predicting Criterion Variables - Study 2

Criterion	Leadership (IV)	Validity (β)	L factor alone (R^2)	L factor + 1 factor (R^2)		ΔR^2
Performance	L factor[a]	.204*	.046			
	Consid.[b]	-.106*		.053		.007
	LMX[b]	.194*		.142		.096*
	CR[b]	0		.041		0[c]
	TFL[b]	.067		.045		0[c]
					Average	.007
OCB	L factor[a]	.421	.188			
	Consid.[b]	-.093		.206		.018
	LMX[b]	.150*		.190		.002
	CR[b]	-.020		.191		.003
	TFL[b]	.183*		.209		.021*
					Average	.008
Job Satisfaction	L factor[a]	.647*	.431			
	Consid.[b]	-.005		.431		.000
	LMX[b]	.119*		.434		.003
	CR[b]	.026		.430		0[c]
	TFL[b]	.069		.430		0[c]
					Average	.002
Affect Commit	L factor[a]	.642*	.426			
	Consid.[b]	-.125*		.429		.003
	LMX[b]	.113*		.427		.001
	CR[b]	.038		.425		0[c]
	TFL[b]	.116*		.429		.003
					Average	.002
CWB	L factor[a]	-.174*	.031			
	Consid.[b]	0		.031		.000
	LMX[b]	-.067		.033		.002
	CR[b]	.044		.034		.003
	TFL[b]	-.035		.031		.000
					Average	.001

Table 16 (cont.)

Criterion	Leadership (IV)	Validity (β)	L factor alone (R^2)	L factor + 1 factor (R^2)		ΔR^2
Withdrawal	L factor[a]	-.201*	.044			
	Consid.[b]	-.044		.045		.001
	LMX[b]	-.126*		.053		.009
	CR[b]	.040		.049		.005
	TFL[b]	-.081		.045		.001
					Average	.004
Turnover Intentions	L factor[a]	-.448*	.208			
	Consid.[b]	.028		.209		.001
	LMX[b]	-.138*		.216		.008
	CR[b]	.015		.209		.001
	TFL[b]	-.068		.208		.000
					Average	.003

Note. Each row below the L factor represents a separate regression model. Validity estimates are standardized. L factor is indicated by consideration, LMX, contingent reward, and transformational leadership. Variance of CR is fixed to .001. Validity = predictive validity of leadership constructs. [a] = Validity for L factor is the beta coefficient of the L factor alone predicting a criterion. [b] = Validity for each first-order leadership factor is the beta coefficient of that factor predicting a criterion, over and above the L factor. L factor alone = R^2 when L factor predicts a criterion. L + 1 factor = R^2 when a specific factor is added to the L factor when predicting a criterion. ΔR^2 = change in R^2 when a specific factor is added to the L factor when predicting a criterion. [c] = Negative ΔR^2 estimates were reset to zero.

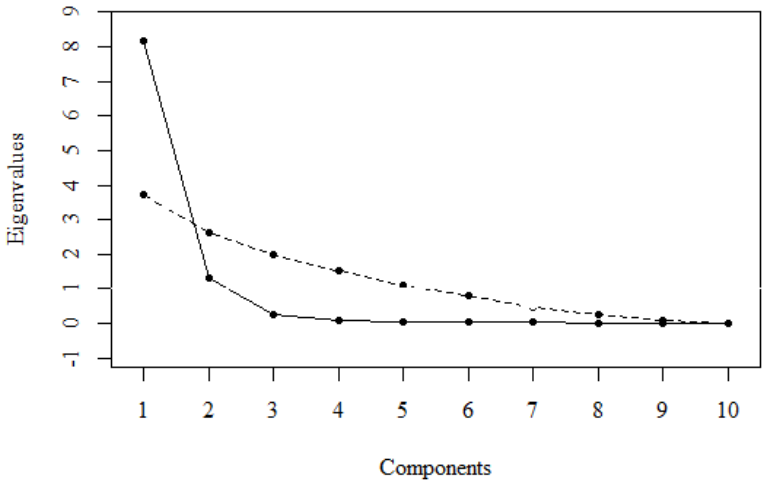
Table 17

Personality Traits Predicting Lower-order Leadership Factors Beyond L Factor - Study 2

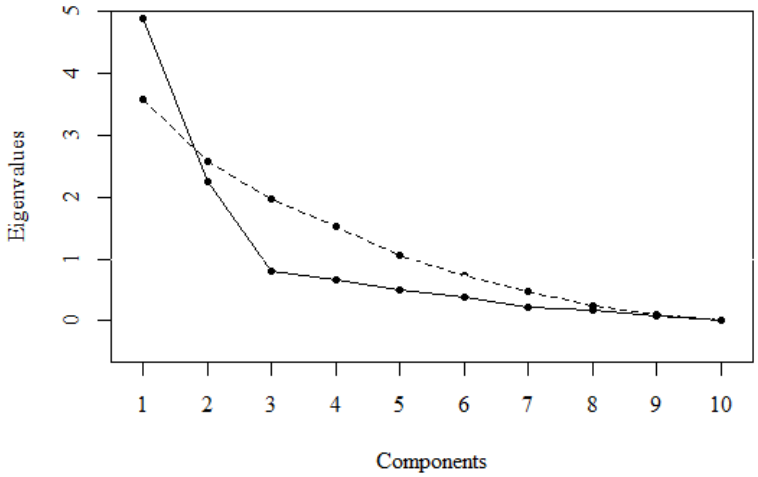
Predictor	**Leadership (DV)**	**Personality Validity (β)**	**L factor alone (R^2)**	**L + Personality (R^2)**	**ΔR^2**
Emotional Stability	Consid.	-.047*	.864	.862	0[b]
	LMX	-.031*	.928	.926	0[b]
	CR	-.004	.834	.834	.000
	TFL	.004	.934	.934	.000
				Average =	.000
Agreeableness	Consid.	.316*	.851	.860	.009
	LMX	.419*	.920	.923	.003
	CR	.367*	.818	.828	.010
	TFL	.251*	.928	.934	.006
				Average =	.007
Conscientiousness	Consid.	.360*	.856	.860	.004
	LMX	.696*	.923	.917	0[b]
	CR	.432*	.824	.826	.002
	TFL	.333	.930	.934	.004
				Average =	.003
Extraversion	Consid.	.293*	.855	.860	.005
	LMX	.573*	.922	.916	0[b]
	CR	.349*	.823	.828	.005
	TFL	.137*	.930	.932	.002
				Average =	.003
Openness	Consid.	.360*	.855	.860	.005
	LMX	.680*	.922	.912	0[b]
	CR	.358*	.824	.828	.004
	TFL	.083	.930	.931	.001
				Average =	.003

Note. Each row represents a separate regression model. Validity estimates are standardized. L factor is indicated by consideration, LMX, contingent reward, and transformational leadership. Validity = predictive validity of Big Five personality traits. [a] = Validity for each first-order leadership factor is the validity of the personality trait predicting each first-order factor, over and above the L factor. L factor alone = R^2 for the L factor predicting each lower-order leadership trait. L + Personality = R^2 when a personality trait is added to the L factor to together predict each lower-order leadership trait. ΔR^2 = change in R^2 when a personality trait is added to the L factor when predicting each lower order leadership trait (shows incremental validity of each personality trait predicting each lower-order leadership factor, above and beyond the L factor). [b] = Negative ΔR^2 estimates were reset to zero.

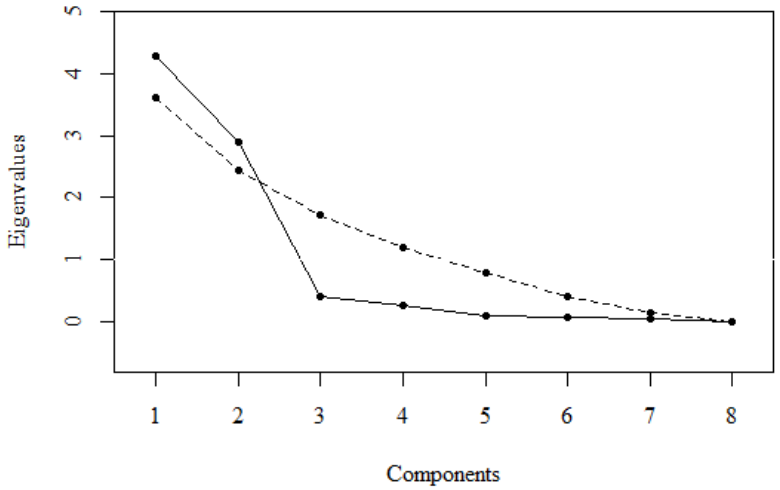
Sample 1: LBDQ 10 dimensions, Hemphill & Coons (N=205 member-ratings)



Sample 2: LBDQ 10 dimensions, Hemphill & Coons (N=152 leader self-ratings)



Sample 3a: LBDQ 8 dimensions, Halpin & Winer (N=300)



Sample 3b: LBDQ 5 dimensions, Halpin & Winer (N=300)

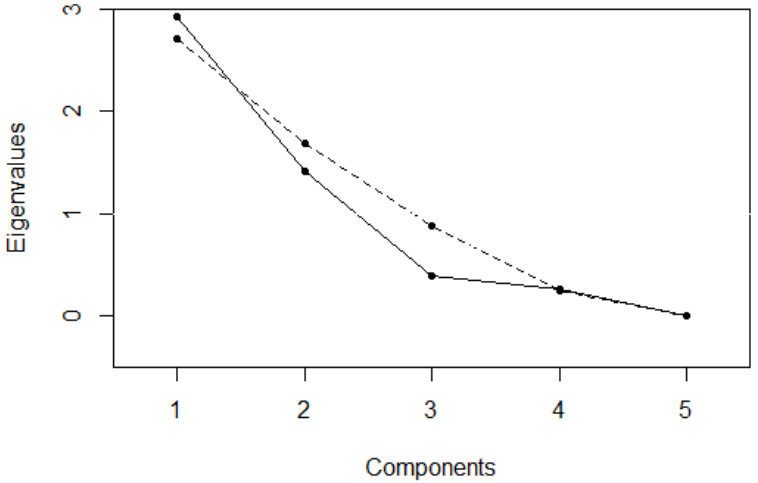
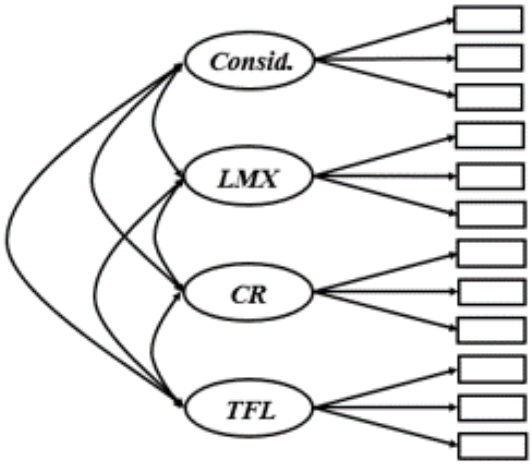
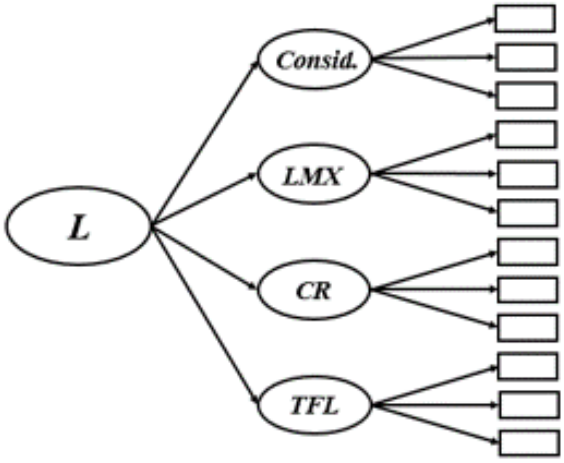


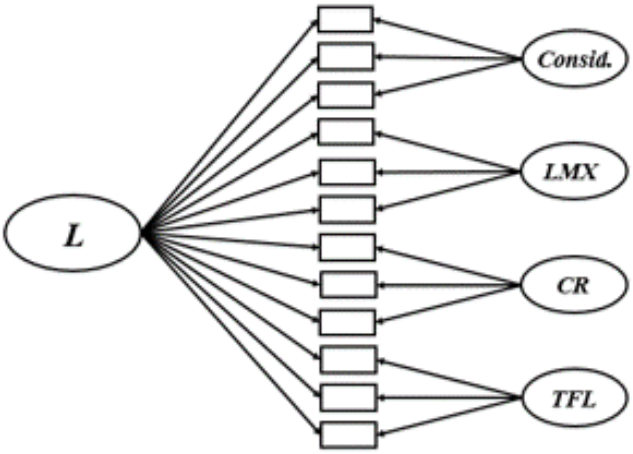
Figure 1. Parallel analysis for LBDQ dimensions: Data from Hemphill & Coons (1957) and Halpin & Winer (1957).
Note. Solid line = real data eigenvalues, Dotted line = parallel analysis 95th %ile eigenvalues (75 %ile for Sample 4).



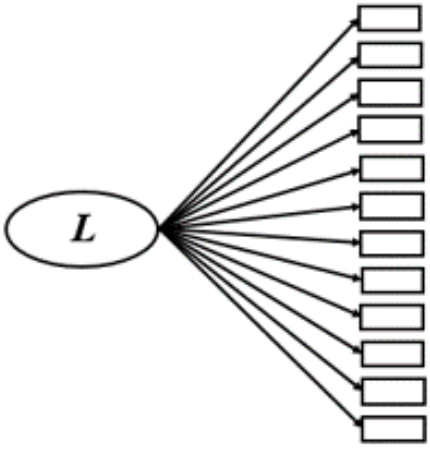
Model 1: Oblique four-factor model



Model 2: Hierarchical model

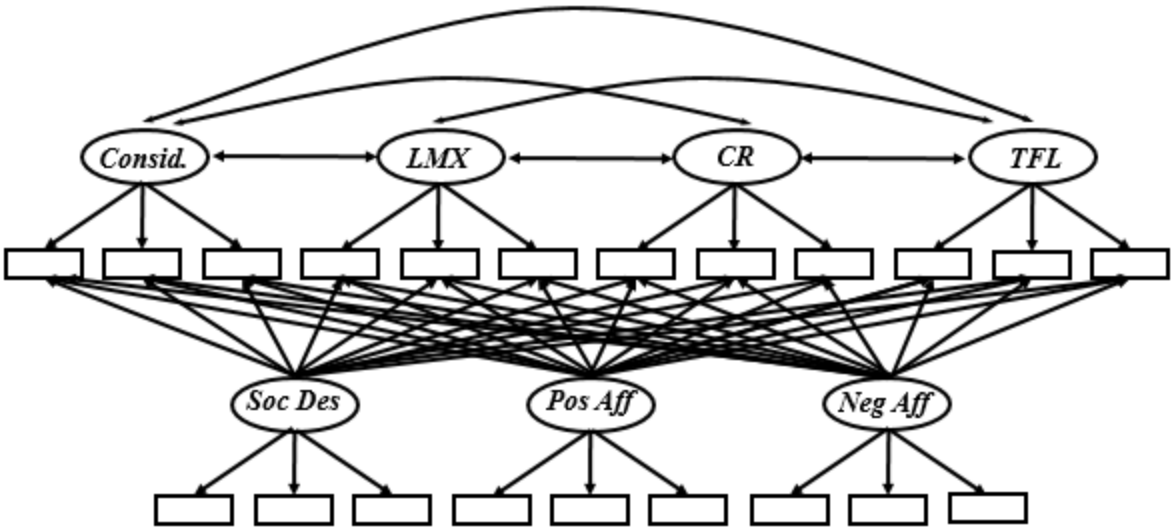


Model 3: Bifactor model

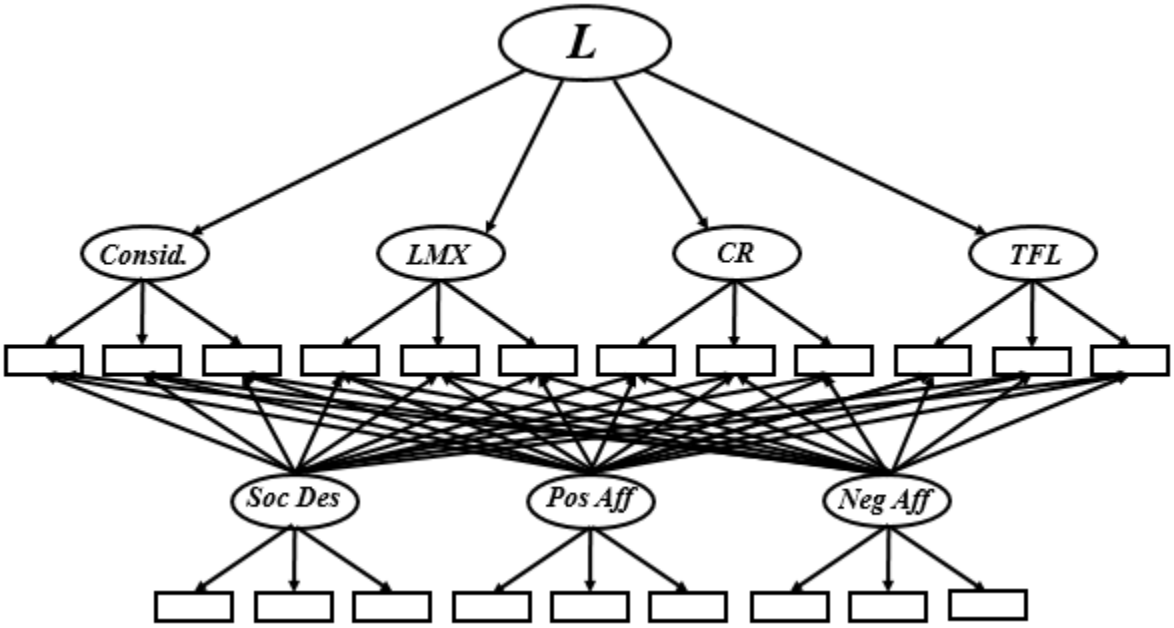


Model 4: Unidimensional model

Figure 2. Four measurement models of leadership constructs.



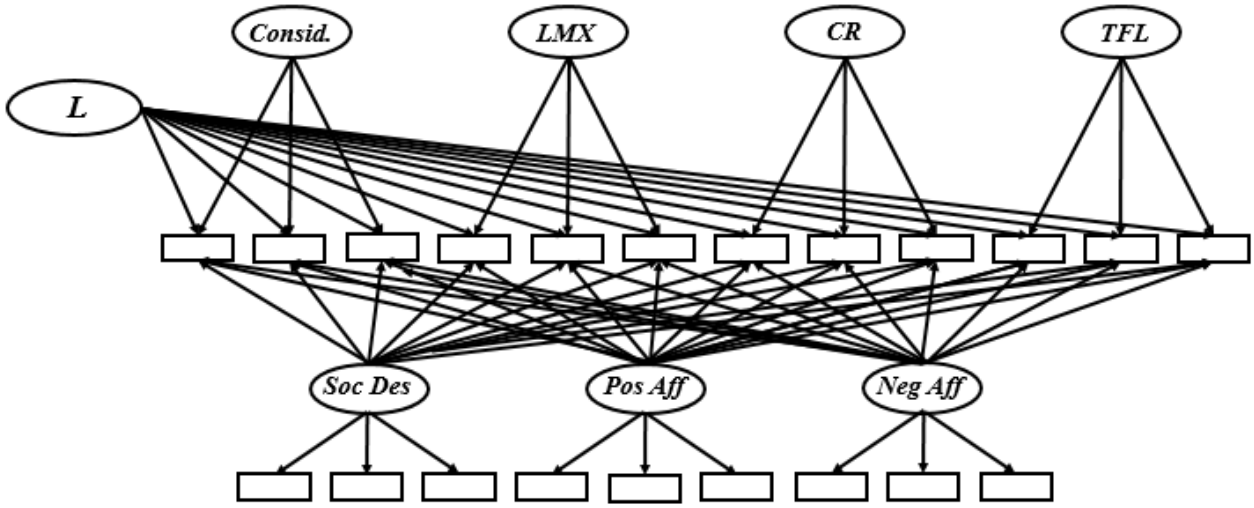
Model 1b: Common method bias-oblique model



Model 2b: Common method bias-hierarchical model

Figure 2b. Common method bias measurement models of leadership constructs.

Figure 2b (cont.)



Model 3b: Common method bias-bifactor model

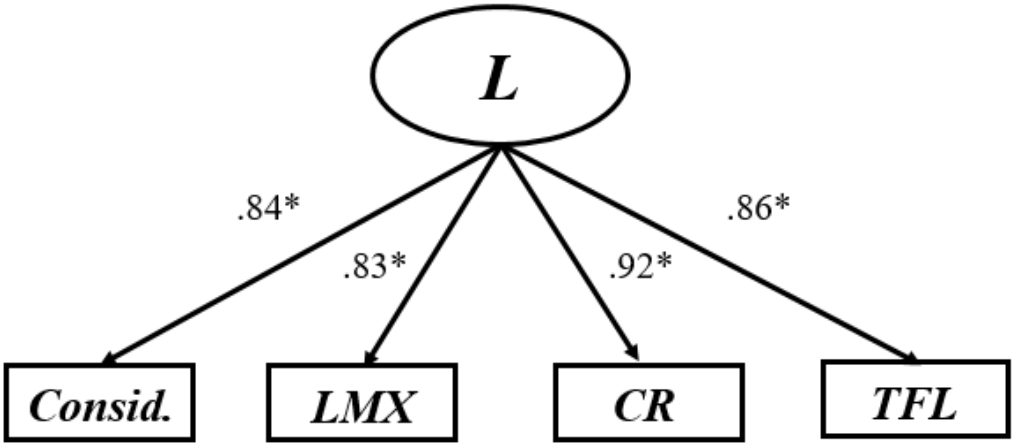


Figure 3. Measurement model of simple L factor in Study 1. Harmonic mean *N* = 3,589. Parameter estimates are standardized. $\chi 2(df) = 337\ (14)$; $p < .05$; RMSEA = .22; SRMR = .02; CFI = .97; TLI = .91; AIC = 30,215.

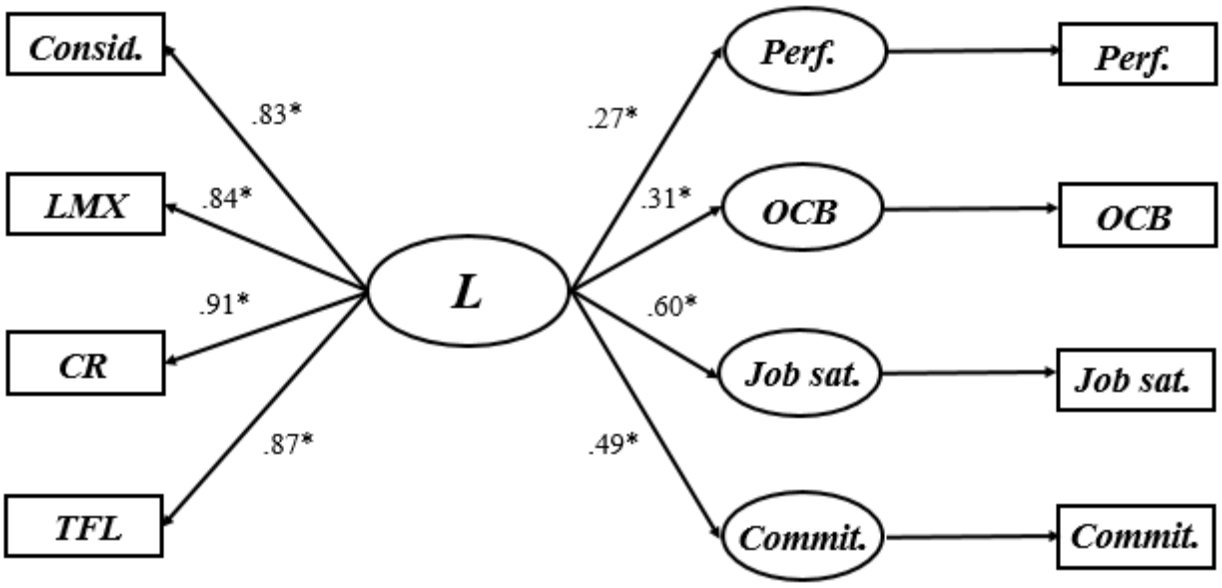


Figure 4. Model of leadership constructs predicting criterion variables from Study 1. Harmonic mean N = 3,362. Parameter estimates are standardized. χ^2(df) = 1,185 (14); $p < .05$; RMSEA = .16; SRMR = .04; CFI = .92; TLI = .85; AIC = 62,239.

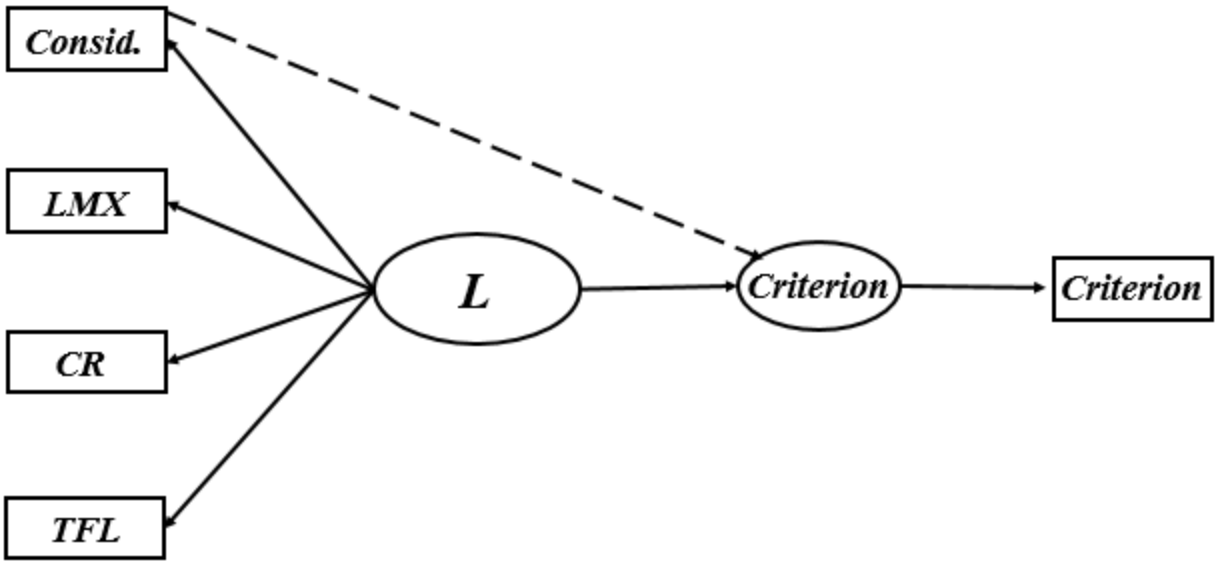


Figure 5. Specific validity of leadership constructs predicting criterion variables from Study 1. The dashed line represents the specific validity of consideration in prediction criterion variables after controlling for the L factor. The specific validity of each leadership construct was tested individually. Harmonic mean N = 3,362. Parameter estimates are standardized.

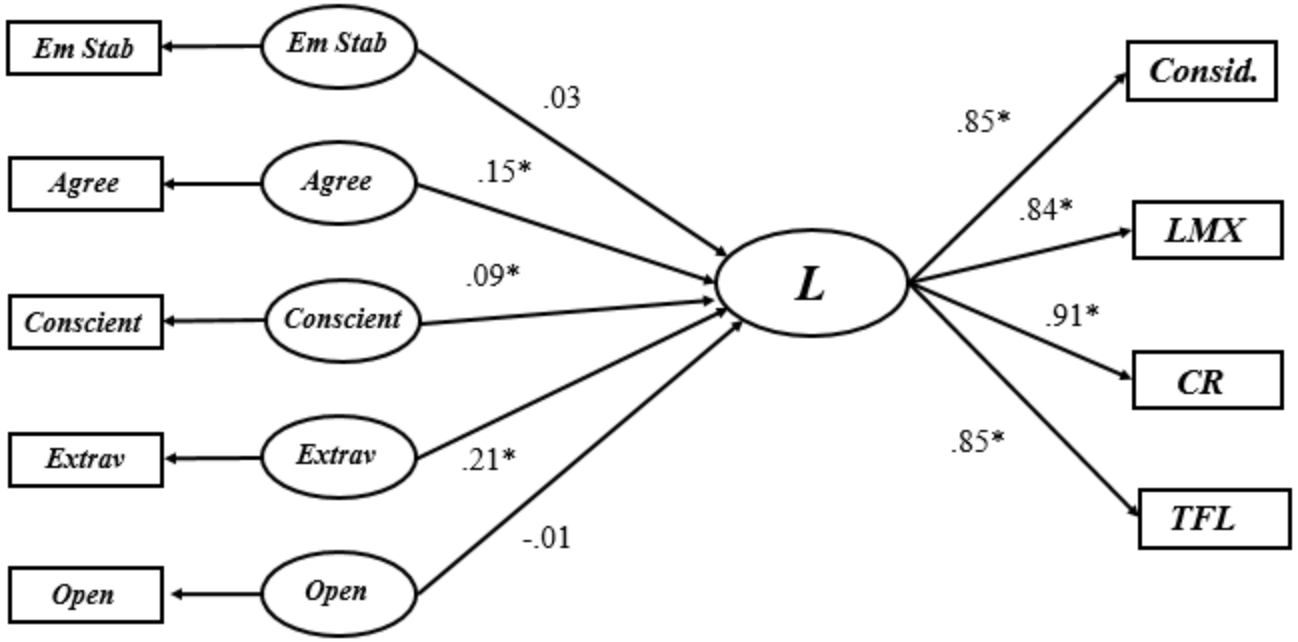


Figure 6. Model of personality traits predicting L factor from Study 1. Harmonic mean *N* = 1,256. Parameter estimates are standardized. χ^2(df) = 818(17); p < .05; RMSEA = .19; SRMR = .05; CFI = .84; TLI = .66; AIC = 27,911.

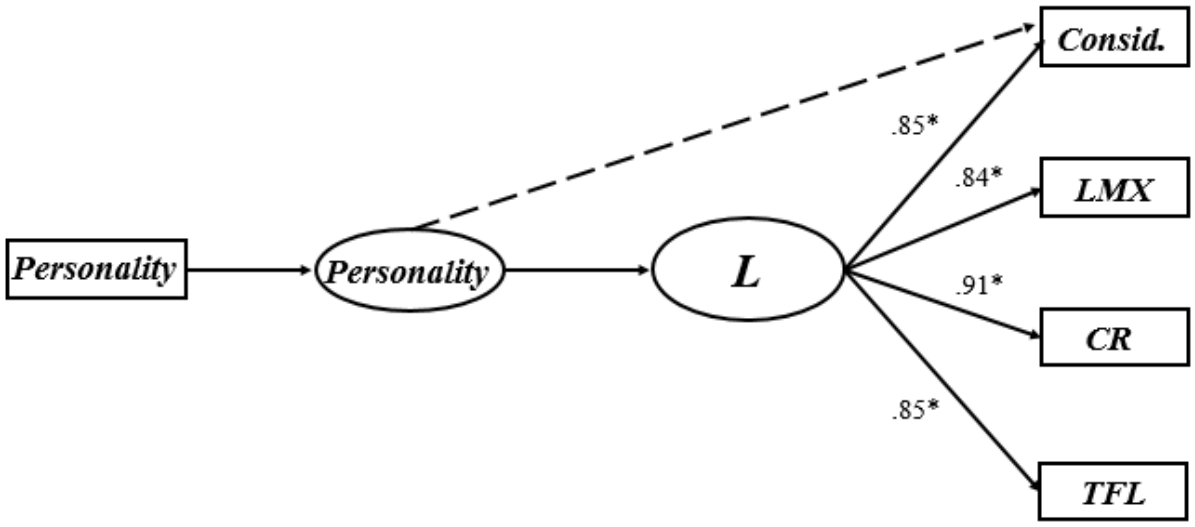


Figure 7. Specific validity of Big Five personality traits predicting L factor and lower-order leadership factors from Study 1. The dashed line represents the specific validity of a personality trait in predicting a lower-order leadership factor after controlling for the L factor. The specific validity of each personality trait was tested individually. Harmonic mean N = 1,256. Parameter estimates are standardized.

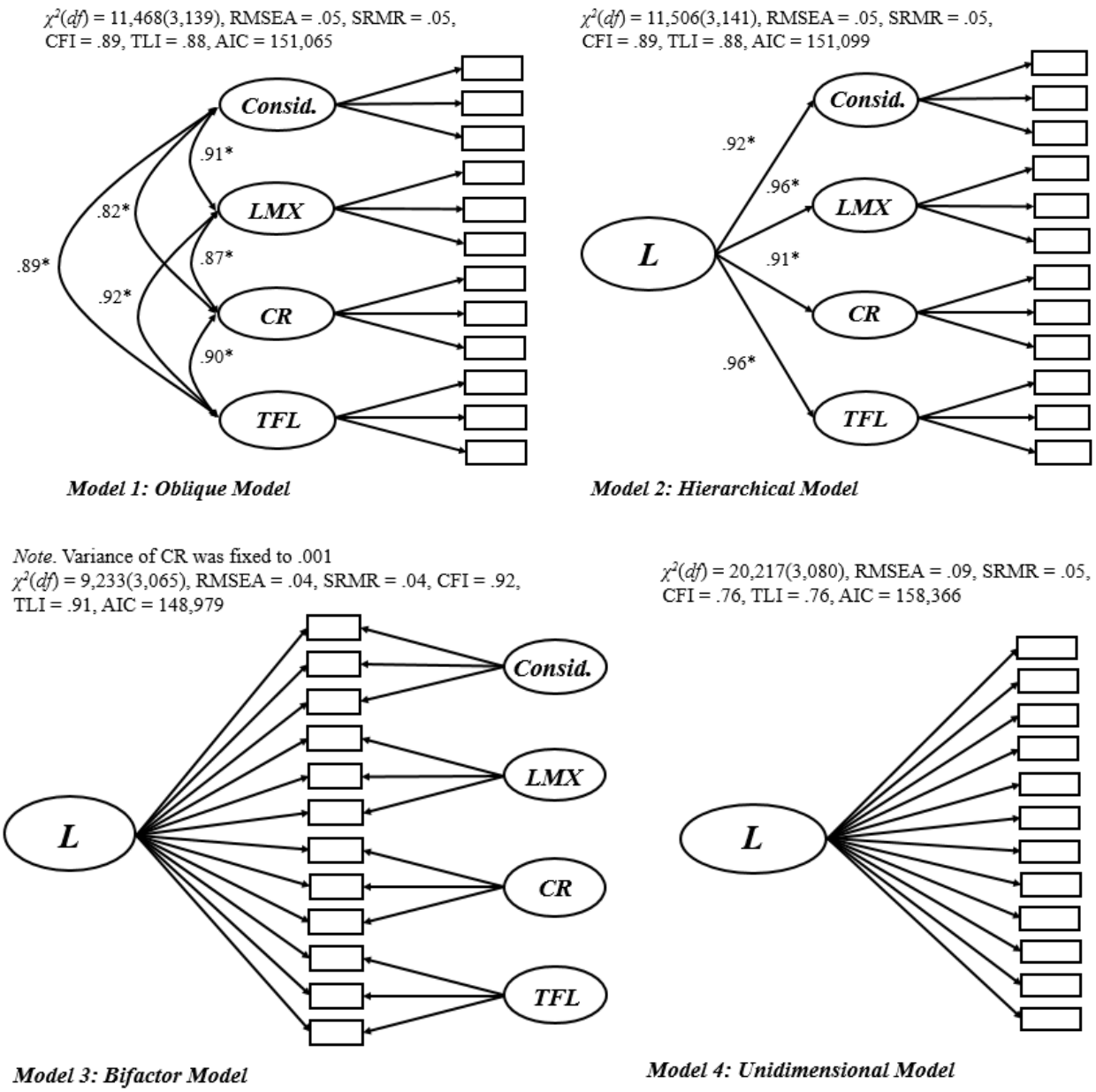
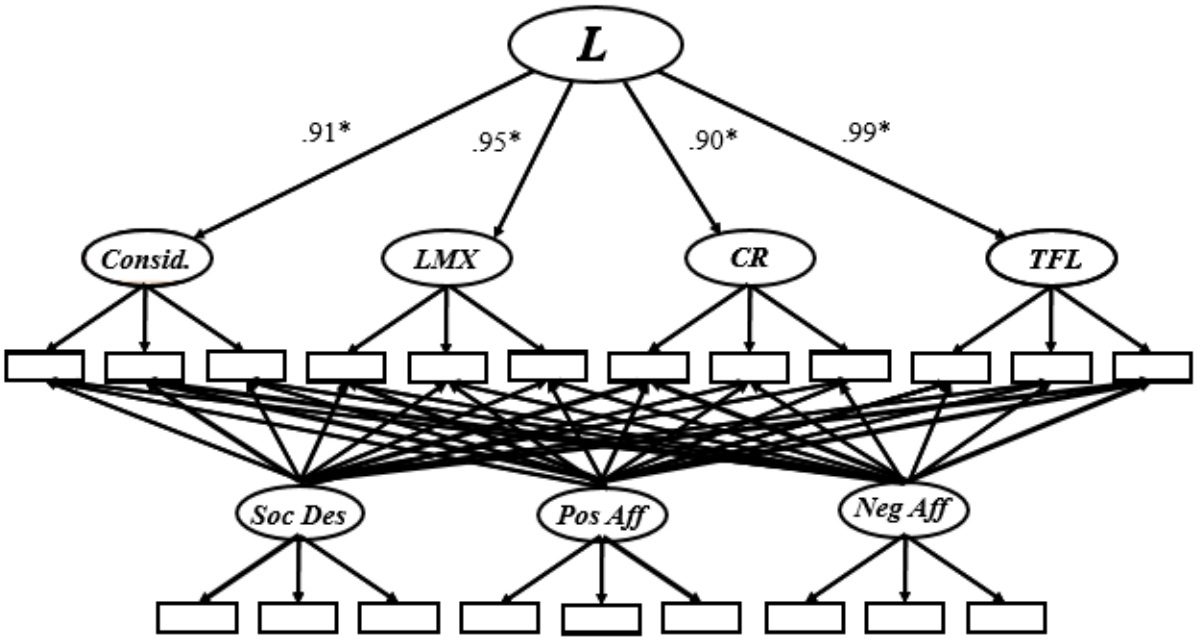


Figure 8. Measurement models from Study 2. N = 941.

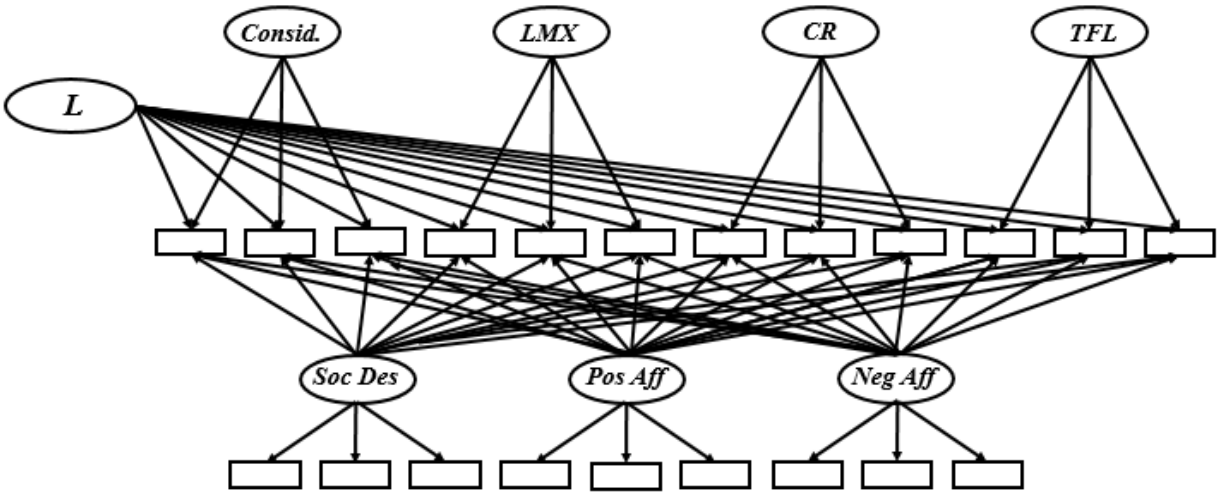
Figure 8 (cont.)

$\chi^2(df)$ = 18,229(6,066), RMSEA = .05, SRMR = .08, CFI = .87, TLI = .86, AIC = 224,689



Model 2b: Common Method Bias Model - Hierarchical

$\chi^2(df)$ = 16,086(5,990), RMSEA = .042, SRMR = .070, CFI = .89, TLI = .88, AIC = 222,698



Model 3b: Common Method Bias Model - Bifactor

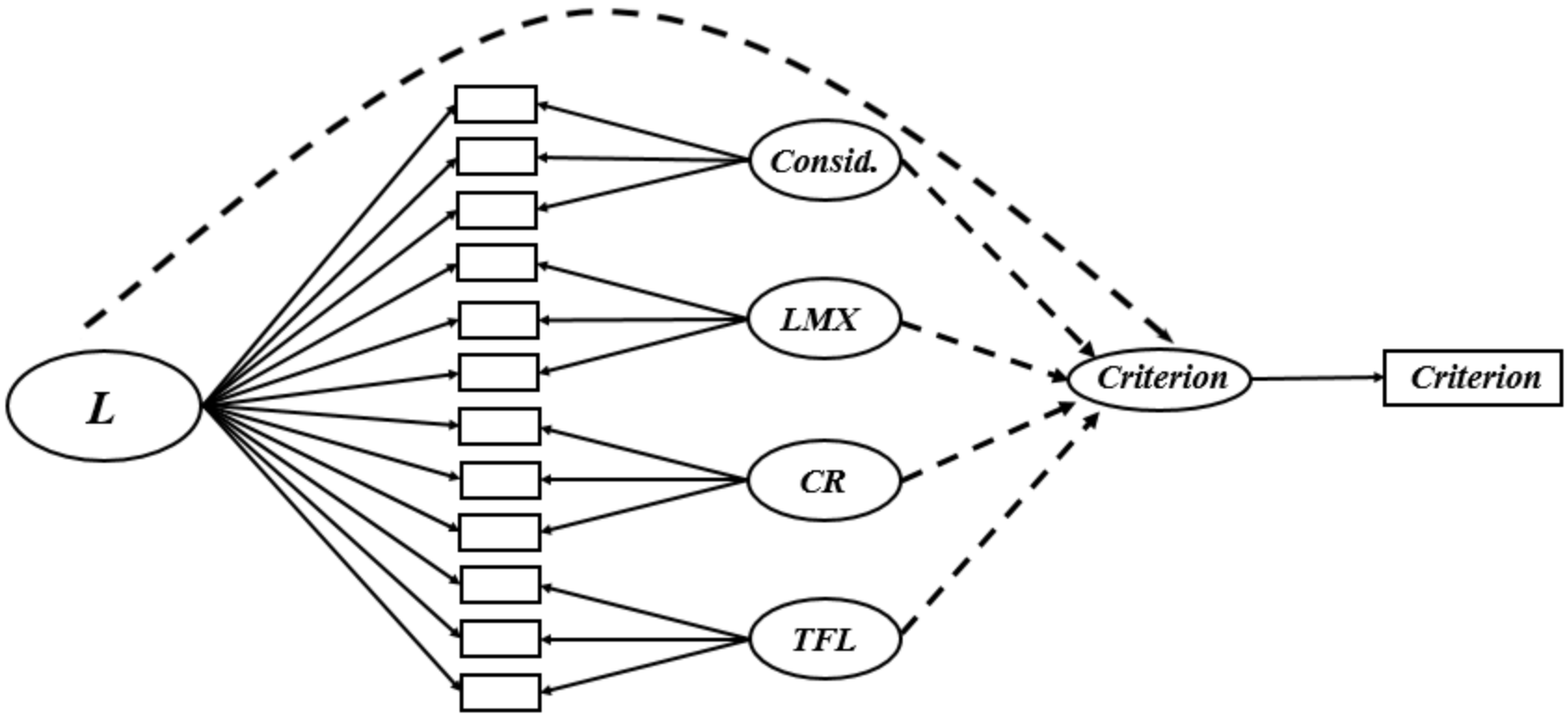


Figure 9. Structural equation model of leadership constructs predicting criterion variables from Study 2. Dashed lines represent the specific validities of lower-order leadership constructs above the L factor.

$\chi^2(df)$ = 23,175(7,592); p < .05; RMSEA = .05; SRMR = .06; CFI = .84; TLI = .84; AIC = 250,989.

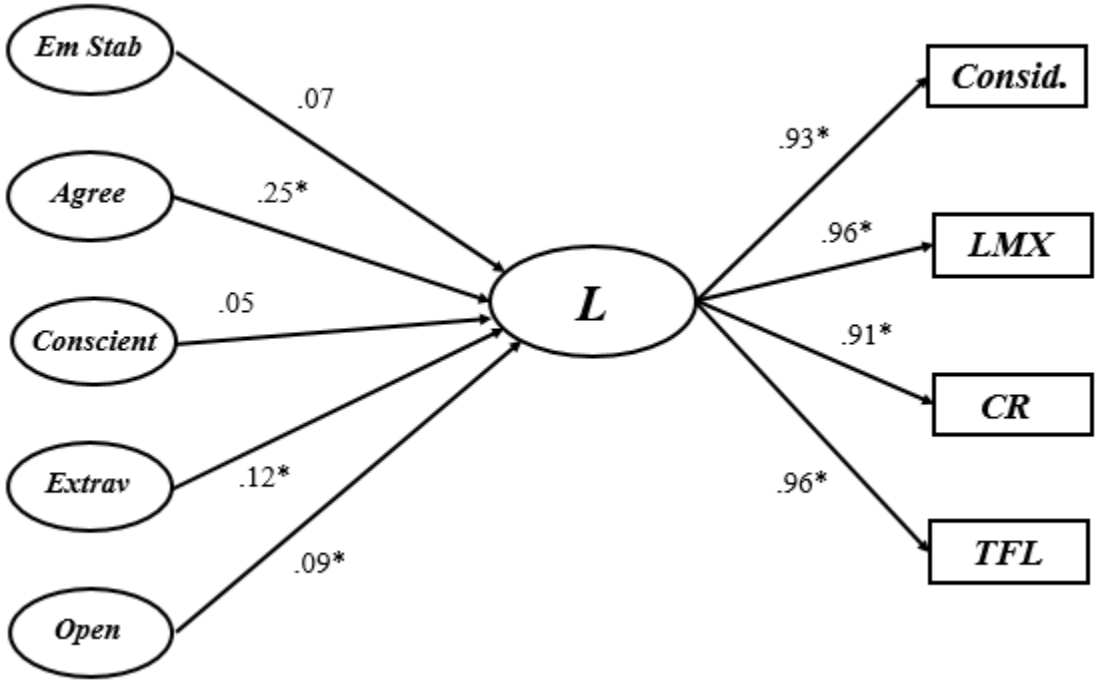


Figure 10. Structural equation model with follower personality traits predicting the L factor. L factor loadings were fixed to results from Model 2: Hierarchical model. *N* = 941.

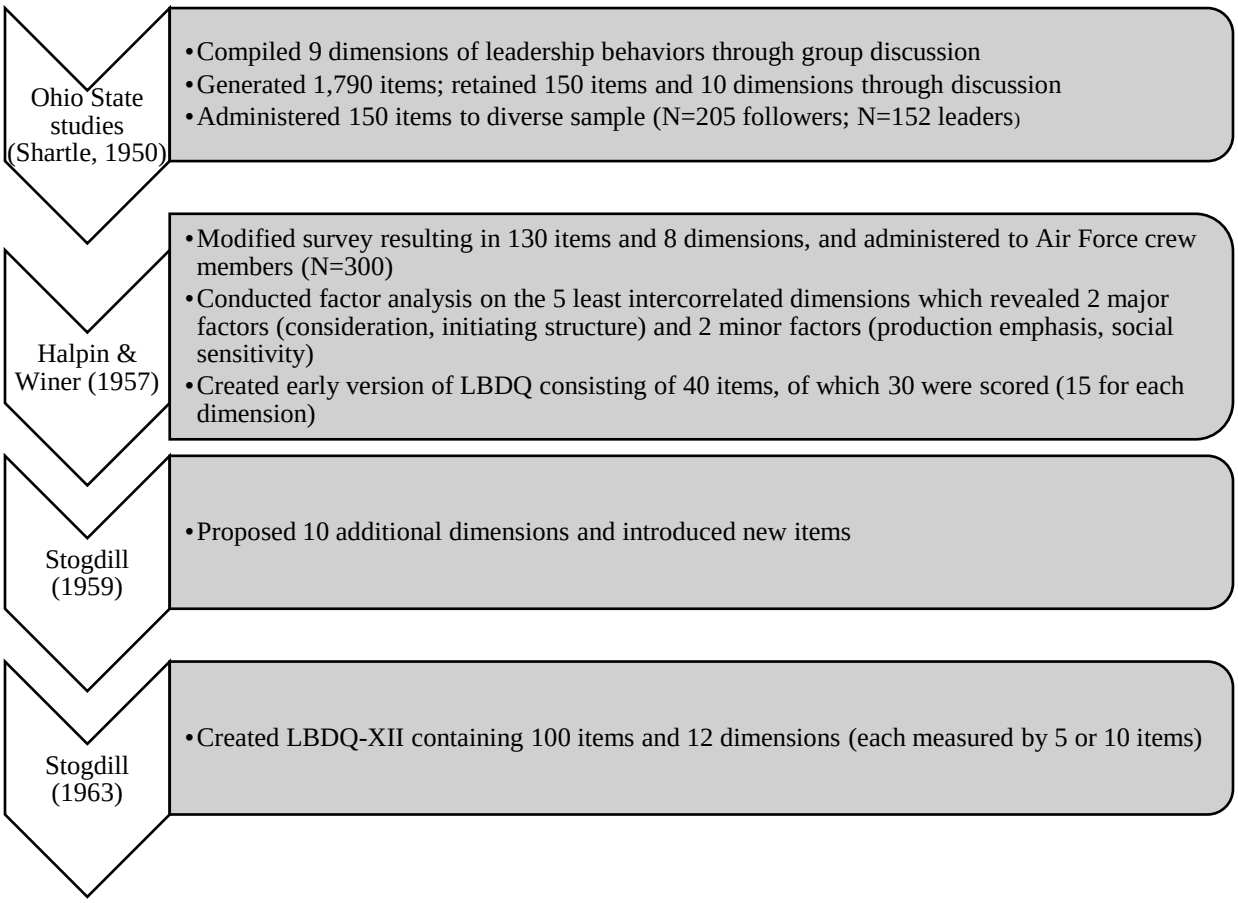


Figure 11a. Timeline of development of LBDQ items.

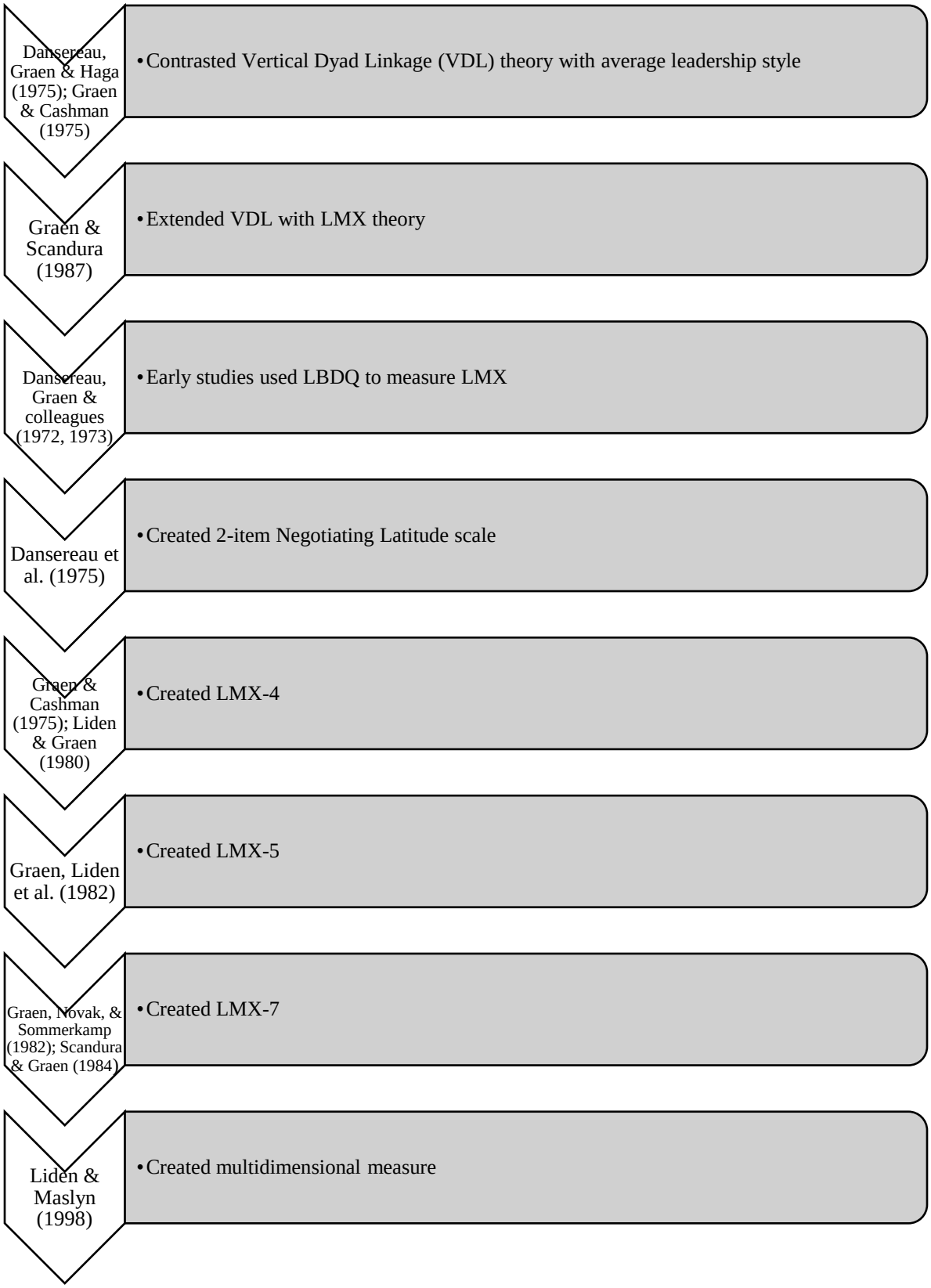


Figure 11b. Timeline of development of LMX items.

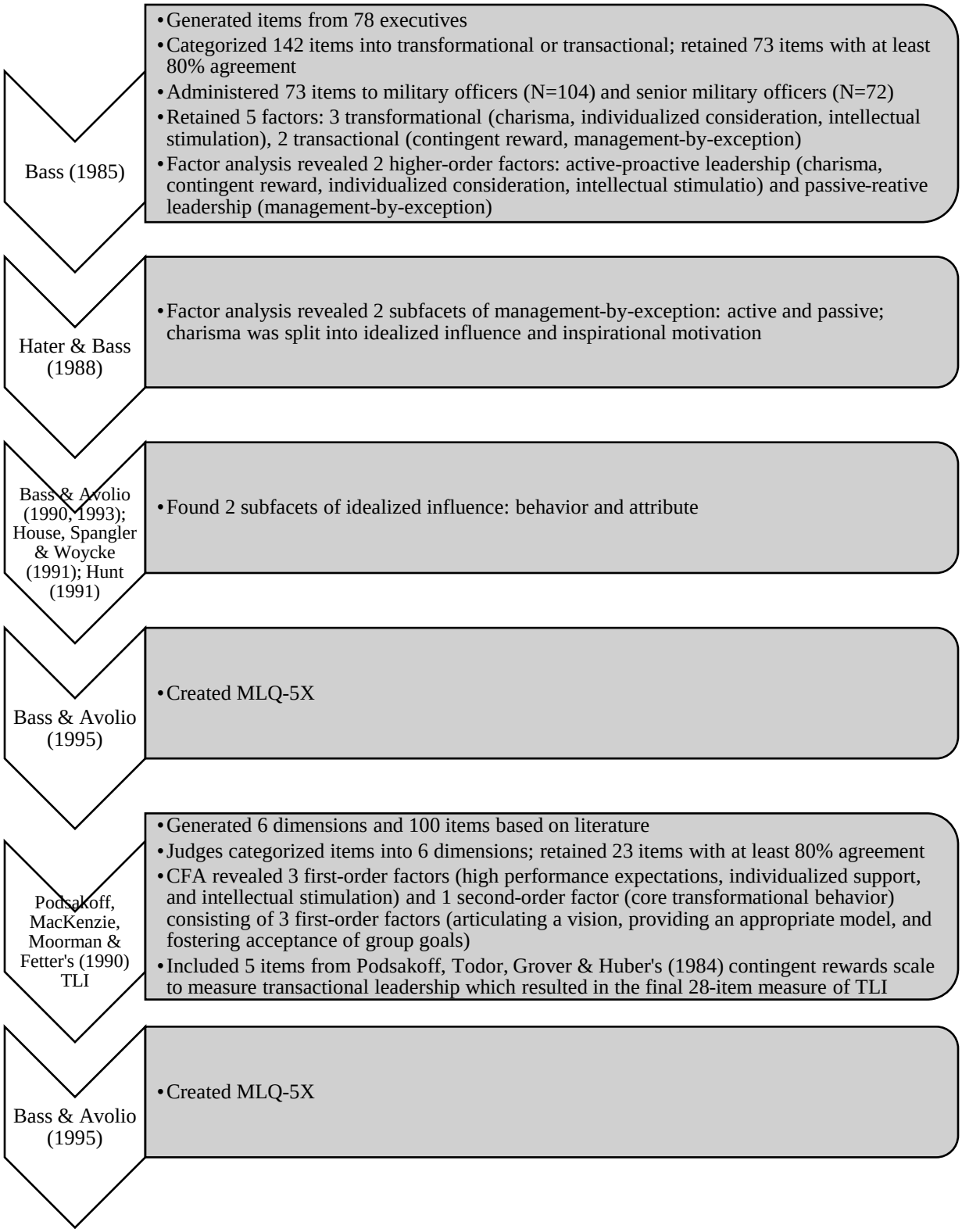


Figure 11c. Timeline of development of MLQ and TLI items.

APPENDIX: ORIGINAL LEADERSHIP ITEMS

Table 18

Original Form of 150 LBDQ Items from Stogdill & Coons (1957, p. 153-156)

Item #	Item
1	He plans his day's activities in detail.
2	He refuses to compromise a point [R].
3	He makes his attitudes clear to the group.
4	He does personal favors for group members.
5	He encourages the members to work as a team.
6	He expresses appreciation when a member does a good job.
7	He defends the group against criticism.
8	He encourages overtime work [R].
9	He tries out his new ideas in the group.
10	He has everything going according to schedule.
11	He rules with an iron hand [R].
12	He seeks information from group members.
13	He invites members to his home.
14	He does little things to make it pleasant to be a member of the group.
15	He criticizes poor work.
16	He makes outside contacts for the group.
17	He talks about how much should be done.
18	He stresses the need for new practices.
19	He meets with the group at regularly scheduled times.
20	He speaks in a manner not to be questioned [R].
21	He is easy to understand.
22	He engages in friendly jokes and comments during group meetings.
23	He sides with the same members in cases of disagreement.
24	He compliments a member on his work in front of others.
25	He sells the public on the importance of his group.
26	He asks for more than the members can get done [R].
27	He follows routine to the letter.
28	He works without a plan [R].
29	He uses his veto powers.
30	He keeps informed about the work that is being done.
31	He helps members of the group with their personal problems.
32	He helps new members make adjustments.
33	He criticizes a member in front of others.
34	He stands up for the group even if it makes him unpopular.
35	He encourages slow working members to greater effort.
36	He waits for the group to push new ideas.

Table 18 (cont.)

Item #	Item
37	He assigns members to particular tasks.
38	He insists that everything be done his way.
39	He keeps the group informed.
40	He works right along with the group.
41	He asks for sacrifices from individuals for the good of the group.
42	He sees that a member is rewarded for a job well done.
43	He speaks in public in the name of the group.
44	He sets an example by working hard himself.
45	He pushes new ways of doing things.
46	He asks that members follow organizational lines.
47	He yields to others in a discussion.
48	He finds time to listen to other members.
49	He asks to be called by his first name.
50	He encourages the group to organize social activities.
51	He criticizes members for small mistakes.
52	He seeks special advantages for his group.
53	He sees to it that members are working up to capacity.
54	He rejects suggestions for change.
55	He figures ahead on what should be done.
56	He has members share in making decisions.
57	He calls the group together to talk things over.
58	He discusses his personal problems with group members.
59	He encourages understanding of points of view of other members.
60	He reacts favorably to anything members do.
61	He takes the blame when outsiders criticize the group.
62	He emphasizes the quantity of work.
63	He changes his approach to meet new situations.
64	He maintains definite standards of performance.
65	He changes the duties of members without first talking it over with them.
66	He keeps well informed about the progress of the group.
67	He keeps to himself.
68	He gives personal attention to members who seem neglected.
69	He criticizes his own performance.
70	He is spokesman for the group.
71	He lets members work at their own speed.
72	He suggests new approaches to problems.
73	He treats members like cogs in a machine.
74	He encourages members to express their ideas and opinions.
75	He gives information on how to do things.

Table 18 (cont.)

Item #	Item
76	He calls members by their first names.
77	He puts group welfare above the welfare of any member.
78	He gives credit when credit is due.
79	He tries to keep the group in good standing with those in higher authority.
80	He emphasizes the quality of work.
81	He resists changes in ways of doing things.
82	He budgets his time.
83	He follows the guidance of the group.
84	He asks to be informed on decisions made by members.
85	He looks out for the personal welfare of individual members.
86	He tries to stop rumors when they occur.
87	He "rides" the member who makes a mistake.
88	He reverses his stand when he meets outside opposition.
89	He advises members to take it easy.
90	He originates new approaches to problems.
91	He sees that members have the material they need to work with.
92	He lets others do their work the way they think best.
93	He provides means for members to communicate with each other.
94	He attends social events of the group.
95	He blames the same members when anything goes wrong.
96	He tells a member when he does a particularly good job.
97	He presents only his own point of view to outsiders.
98	He stresses being ahead of competing groups.
99	He encourages members to start new activities.
100	He shows members how each job fits into the total picture.
101	He refuses to explain his actions.
102	He is aware of conflicts when they occur in the group.
103	He draws a definite line between himself and the rest of the group.
104	He discourages individual criticism of group behavior.
105	He explains the reasons for criticisms.
106	He speaks favorably of the group when talking with outsiders.
107	He "needles" members for greater effort.
108	He is first in getting things started.
109	He uses a standard method of evaluating members.
110	He acts without consulting the group.
111	He gives advance notice of changes.
112	He associates with members regardless of their position.
113	He stresses the importance of high morale in the group.
114	He uses constructive criticism.

Table 18 (cont.)

Item #	Item
115	He backs up the members in their actions.
116	He is slow to accept new ideas.
117	He sees to it that the work of members is coordinated.
118	He decides in detail what shall be done and how it shall be done.
119	He takes time to find out what members are doing.
120	He treats all members as his equal.
121	He helps members of the group settle their conflicts.
122	He criticizes a specific act rather than a person.
123	He contacts important people in an effort to help the group.
124	He is willing to make changes.
125	He stresses orderly methods of doing the job.
126	He incites criticism of his acts.
127	He makes members feel at ease when talking with him.
128	He is friendly and approachable.
129	He discourages members from pursuing their individual aims.
130	He uses his influence with outsiders in the interest of the group.
131	He schedules the work to be done.
132	He puts suggestions by the group into operation.
133	He knows about it when something goes wrong.
134	He pits one member against another.
135	He publicizes outstanding work of members of his group.
136	He emphasizes meeting of deadlines.
137	He regards what members do outside the group as of no concern to him.
138	He lets members know how they are doing.
139	He carries out the promises he makes.
140	He encourages the use of certain uniform procedures.
141	He gets group approval on minor matters before going ahead.
142	He knows who is responsible for each job.
143	He gets group approval on important matters before going ahead.
144	He reports progress to the group.
145	He lets the group set its own goals.
146	He keeps informed on how members think and feel about things.
147	He reports what is going on outside the group.
148	He makes sure his part in the group is understood by members.
149	He lets members know what is expected of them.
150	He tries to keep things as they are.

Note. Each item was rated on a 5-point scale, using one of the following three combinations of 5 response options: (Combination A) Always, Often, Occasionally, Seldom, Never, (Combination B) Often, Fairly often, Occasionally, Once in a While, Very Seldom, and (Combination C) A great deal, Fairly much, To some degree, Comparatively, Not at all.

Table 19

Means and Variances of MLQ Items from Bass (1985, p. 200-204)

Item #	Mean	Var.	Item
1	2.58	1.35	Makes me feel good to be around him/her.
2	2.66	1.25	Makes me feel and act like a leader.
3	3.41	.85	Is satisfied when I meet agreed-upon standards for good work.
4	2.76	1.15	Makes me feel ready to sacrifice my own self-interest for the good of the group.
5	2.87	1.22	Makes me feel we can reach our goals without him/her if we have to.
6	3.31	1.01	I earn credit with him/her by doing my job well.
7	2.14	1.22	Assures me I can get what I personally want in exchange for my efforts.
8	2.76	1.14	Makes me go beyond my own self-interests for the good of the group.
9	2.27	1.18	Puts suggestions by the group into operation.
10	2.14	1.30	Finds out what I want and tries to help me get it.
11	2.73	1.25	You can count on him/her to express his/her appreciation when you do a good job.
12	2.75	1.22	Commands respect from everyone.
13	2.27	1.36	I put all my effort into accomplishing each task as a consequence of his/her leadership.
14	2.25	1.31	Because of him/her, I am less concerned about my own immediate needs and am concerned about our group reaching its objectives.
15	1.98	1.13	Gives personal attention to members who seem neglected.
16	2.06	1.30	Earns my esteem by helping me to get what I want.
17	2.25	1.45	Is a model for me to follow.
18	2.43	1.40	In my mind, he/she is a symbol of success and accomplishment.
19	2.03	1.15	Has provided me with new ways of looking at things which used to be a puzzle for me.
20	2.62	1.42	Is a good team player.
21	1.75	1.25	Talks a lot about special commendations and promotions for good work.
22	2.59	1.30	I am ready to trust his/her capacity to overcome any obstacles.
23	.79	1.14	Makes me concentrate on my self-interests rather than what is good for the group.
24	1.77	1.29	Makes me do more than I expected I could do.
25	2.12	1.27	He/she is content to let me continue doing my job in the same way as always.

Table 19 (cont.)

Item #	Mean	Var.	Item
26	2.24	1.44	Is an inspiration to us.
27	2.55	1.39	Makes me proud to be associated with him/her.
28	2.45	1.19	Lets me know how I am doing.
29	2.17	1.31	Has a special gift of seeing what it is that is really important for me to consider.
30	2.09	1.10	His/her ideas have forced me to rethink some of my own ideas which I had never questioned before.
31	2.17	1.30	Makes clear what I can expect if my performance meets designated standards.
32	2.12	1.06	Enables me to think about old problems in new ways.
33	3.00	1.15	Is a dominant figure in our group.
34	2.60	1.10	Makes me feel that as long as I do my job satisfactorily I can expect to move ahead.
35	2.27	1.29	Makes sure that payoffs for good subordinate performance are made as quickly as possible.
36	2.00	1.15	Inspires loyalty to him/her.
37	2.56	1.45	Inspires loyalty to him/her.
38	2.24	1.41	Increases my optimism for the future.
39	2.25	1.35	Is inner-directed.
40	2.62	1.30	Inspires loyalty to the organization.
41	2.61	1.35	I have complete faith in him/her.
42	2.18	1.32	Excites us with his/her visions of what we may accomplish if we work together.
43	2.75	1.11	Treats each subordinate individually.
44	2.68	1.04	Spends time talking about the purposes of our organization.
45	2.40	1.10	Arouses my awareness about what is really important.
46	2.87	1.15	Accepts me for what I am as long as I do my job.
47	.91	1.15	Is a father-figure to me.
48	1.47	1.14	I decide what I want; he/she shows me how to get it.
49	1.97	1.18	Sets standards for me which can be easily maintained.
50	2.78	1.36	Encourages me to express my ideas and opinions.
51	2.13	1.37	Motivates me to do more than I originally expected I would do.
52	2.54	1.30	Heightens my motivation to succeed.

Table 19 (cont.)

Item #	Mean	Var.	Item
53	1.97	1.46	Whenever I feel like it, I can negotiate with him/her about what I can get from what I accomplish.
54	1.62	1.26	Asks no more of me than what is absolutely essential to get work done.
55	2.29	1.25	Provides means for me to communicate with others.
56	1.73	1.39	Encourages me to put my free time to good use.
57	1.68	1.20	Tends to spend his/her time "putting out fires" rather than focusing on long-term considerations.
58	1.60	1.28	Only tells me what I have to know to do my job.
59	2.53	1.24	Gives us a vision of what needs to be done and depends on us to fill in the details.
60	2.39	1.33	Encourages understanding of points of view of other members.
61	2.38	1.20	As long as things are going all right he/she does not try to change anything.
62	2.48	1.35	Gives me a sense of overall purpose.
63	1.47	1.21	Tells me what to do if I want to be rewarded for my efforts.
64	1.08	1.09	I cannot succeed in reaching our goals without him/her.
65	1.54	1.19	Gives me what I want in exchange for showing my support for him/her.
66	2.90	1.18	Has a sense of mission which he/she transmits to me.
67	2.16	1.25	Sees to it that my needs are met.
68	2.17	1.32	Makes everyone around him/her enthusiastic about assignments.
69	1.91	1.11	As long as the old ways work, he/she is satisfied with my performance.
70	1.50	1.35	It is all right if I take initiatives but he/she does not encourage me to do so.
71	1.80	1.27	It is all right if I take initiatives but he/she does not encourage me to do so.
72	1.68	1.19	There is close agreement between what I am expected to put into the group effort and what I can get out of it.
73	1.38	1.19	Without his/her vision of what lies ahead of us, we would find it difficult, if not impossible, to get very far.

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